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## ROENTGENOLOGIC ASPECTS OF GASTRO-ENTEROLOGY\*

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December 28, 1895, before the Physico-medical Society at Wurzburg, Wilhelm Konrad Roentgen read a paper, modestly entitled "Concerning a New Ray." In May of the following year Becker, in Berlin, filled the stomach and a portion of the intestine of a guinea-pig with liquor plumbi subacetatis and made a roentgenogram of this; the exposure required was given as twenty-five minutes. Cannon reported to the American Physiological Society in May, 1897, that, by mixing a small quantity of bismuth subnitrate with the food of cats, he had been able to study the contractions of the gastric musculature and the movements of the gastric content with the aid of the fluoroscopic screen. He stat-

\*Read before the Medical and Surgical Staffs of the Grandview Hospital, Ironwood, September 12; the Marquette-Alger County Medical Society, Marquette, September 13, and before the Iron-Dickinson County Medical Society, Iron River, Michigan, September 14, 1933.

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ed: "In this study of the uninjured animal during normal digestion, an unsuspected nicety of mechanical action and a surprising sensitiveness to nervous conditions have thereby been disclosed." In September, 1899, Williams and Cannon fed to two children a mixture of about 30 c.c. of bismuth subnitrate with bread and milk, and observed with the fluoroscopic screen the

movements of the stomach during respiration and the changes in shape of the stomach during the digestive process. Of a third child, whom he had examined roentgenoscopically, Williams made roentgenograms at intervals of one to two hours. In 1901 Cannon obtained roentgenograms of the large and small intestine of the cat by use of the opaque enema. Rieder, in 1904, advocated ingestion of comparatively large quantities of bismuth subnitrate, to study the motor functions of the stomach and to demonstrate roentgenographically the contour, as well as the size, shape and position of the different portions of the gastro-intestinal tract. He considered this medium to be entirely harmless, and predicted that it would be of great value to medical practice and would contribute materially to the diagnosis of gastric and intestinal diseases. Hemmeter, in 1906, published the results of experimental production of ulcers in rabbits and visualization by means of roentgen rays of the denuded areas that he had coated with bismuth. He administered an aqueous suspension of bismuth to three patients, after they had undergone a period of fasting, and succeeded in demonstrating niches on the lesser curvature. In one of these cases, the finding was confirmed at operation. Schwarz, in 1908, succeeded in showing the duodenum roentgenographically, and accurately described the filling of the first portion, with rapid emptying of the descending and horizontal portions. He also recognized the first portion of the duodenum as the almost exclusive situation of duodenal ulcer. Reiche reported a case in 1909 in which he had visualized a large niche on the lesser curvature of the stomach, and subsequent examinations demonstrated that the bismuth meal had been retained for seven and a half hours. At necropsy an ulcer perforating to the pancreas was found. Bachem and Guenther introduced barium sulphate as a substitute for the bismuth preparations in 1910 and stressed several advantages, the greatest of which was the absolute nontoxicity of the barium salt. The excellent shadow produced in the roentgenogram, the not objectionable taste, and the inexpensiveness of the product were other advantages. In the same year Haudek published his experiences in the diagnosis of ulcer, stressing the niche and its permanence of situation at all angles and planes during palpitory manipulation. Faillhaber, in 1910, and Holzknecht, in 1911,

confirmed the experience of Reiche and Haudek, and their findings were accepted generally as a solid basis for the diagnosis of gastric ulcer. Holzknecht called the duodenum by its accepted anatomic name, "bulbus duodeni," and Haudek reported having observed a niche in duodenal ulcer similar to that seen in gastric ulcer. Cole, in a series of papers in 1911, 1912 and 1914, stated that duodenal deformity was the pathognomonic sign of duodenal ulcer. Barclay in England and Pfahler, Hulst, Case, George and Leonard, and Carman in America, were early contributors to the literature on the anatomy, physiology and pathology of the stomach and gastro-intestinal tract, as revealed by roentgenoscopic observations and roentgenograms.

In most epochal developments in medicine there are usually two groups concerned, the discoverers, and those with the inherent ability and the facilities at their disposal to apply the discoveries to the everyday problems of practice wherever they may be indicated. Carman and Miller came to The Mayo Clinic January 1, 1913, with an intimate knowledge of the discoveries and attainments pertaining to the roentgenoscopic and roentgenographic demonstration of lesions involving the gastro-intestinal tract. They had at their disposal a large clientele, everything required in equipment to examine the patients properly, and an established record system that allowed them full access to all information pertinent to the clinical, surgical and pathologic findings in each case. They first developed a comprehensive system of recording all their observations and interpretations, and made this an integral part of the system of the clinic. Carman attended the surgical clinics at the hospitals and was present at the operation in all cases in which the patient had been subjected to roentgenologic examination of the gastro-intestinal tract. He saw the abdominal viscera *in situ* and compared the physiologic manifestations under anesthesia with those he had observed roentgenoscopically. He visualized the lesions before surgical intervention, and, after the specimens had been excised, he went to the laboratory, where he was able to compare the gross macroscopic appearance with the shadow it had cast on the roentgenoscopic screen and on the roentgenographic plate. He studied, in the microscope, the evidence of the lesion, and checked this with his own interpretations. He be-

came conversant with the various surgical procedures carried out for the various types of lesions and, keenly alert to every opportunity, he developed a wide knowledge of post-operative appearances of the normal and abnormal gastro-intestinal tract. Carman and Miller kept in constant touch with the literature, particularly that bearing on their chosen specialty, noted all reported characteristic findings and evaluated them all from experiences in their own daily routine. Constantly reviewing their own material, they segregated the outstanding variations from the normal, noted the best reproductions of the normal, identified various types of the abnormal, took account of findings which seemed to indicate abnormality but which on subsequent examination were not present, and all other observations of possible interest. It has long been the practice at the clinic to dictate comprehensive notes on all the surgical findings immediately on completion of the operation. These are transcribed, with the pathologic report, and filed with the general records of the clinic and all other notes pertaining to each patient. For convenience of access, such of these as were pertinent to the correlation of the findings were copied onto the fluoroscopic sheets and the records retained in the department of roentgenology. The files of the department were in numerical sequence, similar to those of the general record file. Periodic recapitulation of the cases in which the roentgenologic findings agreed or disagreed with the clinical, surgical and pathologic findings provided an accurate check on the accuracy or lack of accuracy of interpretations. The clinical and surgical consultants were provided with tangible evidence of the value of roentgenologic interpretation in the presence of various types of lesions, and in some of the functional or reflex disturbances of the gastro-intestinal tract, and out of this grew a close coöperation that was beneficial to all concerned. With complete clinical and other notes contained in the history sheets made conveniently available, and the salient features correlated in their own departmental records, Carman and Miller were able to review the great mass of material on which was based their concept of the roentgenologic diagnosis of diseases of the alimentary tract. At the beginning of their work, they asked for, and received, the clinical history, and reviewed this prior to their examination.

Increasing experience revealed a tendency to attempt to make the roentgenologic interpretation fit the history, and very early in their work this practice was abandoned. Review of their early records revealed a much larger number of "indeterminate" findings during the period in which this practice persisted. Although the various observations were charted by underlining them on especially devised forms, the practice of transcribing these in the report was abandoned and only the roentgenologic diagnosis was sent to the clinician. Correlation by consultation between the roentgenologist, and the clinician or surgeon, was encouraged and in all cases of doubt the patient was examined again, with especial attention directed to the confirmation of the presence or absence of the type of lesion suspected by the consultants. Under this arrangement the percentage of accuracy increased perceptibly, confidence in the roentgenologic method of diagnosis was established, and a keener appreciation of the value, as well as of the limitations, of the method was engendered. Correlation of clinical and histologic findings in cases in which the roentgenologic findings were negative, proved these to be equally as accurate as the positive findings. This materially widened the scope of roentgenologic investigation. The rare finding of a major lesion involving the gastro-intestinal tract, when the symptoms offered little, if any, suggestion of it, also played a part in popularization of the roentgenologic method.

As the purpose of this paper is to prove the value of the roentgenologic method in the diagnosis of diseases of the gastro-intestinal tract, a review of the findings of one recent year will best illustrate some of the points that are of particular interest. In that period 24.37 per cent of the total number of patients registered in the clinic were referred for roentgenologic investigation of the gastro-intestinal tract or gallbladder. The esophagus, stomach and duodenum were examined in 49.8 per cent, the gallbladder in 29 per cent, and the colon in 21.2 per cent of these cases; the part to be examined was specified by the clinician and each examination was separate from the others. Many times, two or more examinations were requested of the same patient. The stomach, esophagus and duodenum were studied in 36 per cent; the stomach and gallbladder in 18.9 per cent; the stomach, gallbladder and colon in 5.3 per cent,

and the stomach and colon in 9.8 per cent. The gallbladder only was investigated in 15.1 per cent; the gallbladder and colon in 1.5 per cent, and only the colon in 13.4 per cent. It will be interesting to those of lesser opportunity, who are disturbed by the paucity of positive findings in their daily routine, to know that in this group the findings were negative in 70 per cent of the examinations of the stomach, in 70 per cent of the examinations of the colon, and in 64.8 per cent of the examinations of the gallbladder. Deducting multiple examinations of individual patients, findings were positive in 23.6 per cent of examinations of the stomach, in 19.4 per cent of the examinations of the colon, and in 24.1 per cent of the examinations of the gallbladder. In a comparatively large number of the cases in which the findings were negative, surgical intervention for other disorders had been carried out and opportunity was therefore afforded for examination of the gastro-intestinal tract and the gallbladder and to make surgical notes on these. In less than 5 per cent of cases lesions were found that should have been demonstrable by roentgenologic methods and were not so demonstrable. One cannot take credit for this high degree of accuracy, without acknowledging the part played by the clinician in requesting reexamination of patients whose clinical history strongly suggested the existence of a lesion. As I mentioned previously, the roentgenologic diagnosis is based solely on the roentgenoscopic findings as checked by the roentgenographic findings, and little of the history is known to the roentgenologist other than that concerning former operative procedures which might have a bearing on the present roentgenologic picture. The clinician correlates the clinical findings with the report of the roentgenologic and other laboratory findings, and when these are not in agreement, consultation is invited; in all cases in which there is any question, reexamination is requested and carried out.

Roentgenologic investigation of the gastro-intestinal tract should follow a definite routine, and coöperation of the patient is essential to the success of the examination. In order that there can be no misunderstanding the following instructions to the patient are printed on the envelope carrying the referring card: "On the evening previous to the examination, as near 7 p. m. as practicable, eat the type of supper to which you have

been accustomed. If you are not in the habit of eating an evening meal, eat one of moderate size. Do not eat or drink anything in the morning just preceding the examination." This card is presented at the gastric laboratory where analysis of the gastric content is carried out, and the patient is then referred to the roentgenologic laboratory for examination. The referring card is placed in a fresh envelope on which are printed the instructions: "Do not eat or drink anything between now and the time you report for the examination." The practice of roentgenologic observation of the progress of a meal through the gastro-intestinal tract at intervals for six hours, intended to reveal retention, has been abandoned at the clinic; after careful study of the results obtained it was not felt justifiable. In special studies for evidences of retention or lesions of the small bowel, 60 gm. of barium sulphate is administered in 60 gm. of any cooked wheat cereal to which a little skimmed milk and sugar may be added, and frequent periodic examinations are made during the period of six hours. Patients are examined usually in the standing position; if additional information is desired they may be placed on the horizontal table in the prone or the supine position. The contrast substance is made by mixing equal measures of barium sulphate, guaranteed free from impurities, and water. The barium is kept in suspension by a motor driven mixing device and is taken from this as required. Approximately 10 ounces (300 c.c.) are given to the patient, with instructions first to take about two swallows and wait for further instructions. Fluoroscopic observation and palpatory manipulation commence synchronously with ingestion of the medium. With this small amount of barium in the stomach, particular attention should be paid to observation of the walls; approximation of these by deep palpation will allow visualization of the rugae as parallel, vertical strands, and irregularity of these suggestive of lesions or filling defects, particularly on the posterior walls, that might be obscured by larger quantities of the contrast medium. Small niches on the curvatures, particularly the lesser, might be more easily detected at this stage than later. The patient is then instructed to resume drinking the mixture. The barium should be watched in its progress along the esophagus for any suggestion of lesion or abnormality. When indicated,

a subsequent examination after the patient has been given a mixture of 3 parts barium sulphate and 1 part of acacia may be necessary accurately to define the lesion. This mixture passes more slowly, and has a tendency to adhere to the walls of the esophagus. Ordinarily, the stream of barium passes along the esophagus and lesser curvature of the stomach in a comparatively straight line. Any deviation of the stream above the cardiac orifice suggests the possibility of a congenitally short esophagus in a diaphragmatic hernia. A deviation and narrowing of the stream at or immediately below the cardiac orifice is indicative of carcinoma involving the cardiac end of the stomach. In either type of lesion it will be necessary to observe the patient on the horizontal table, in the prone and in the supine position accurately to delineate the defect and to confirm or rule out the existence of one or the other. Infrequently the barium will be held in the fundus of the stomach for an interval, and later commence to empty in a thin narrow stream; this is known as a cascade type of stomach or "the cup and spill" form of deformity, as Barclay has named it. It is a spastic phenomenon, and may be associated with distention of the colon by gas, large extrinsic tumors, or ascites, and in the majority of cases will pass following a short period of relaxation. Re-examination after administration of an antispasmodic substance may be necessary in the rare case to straighten out the stomach and to restore the normal contour.

Benign gastric ulcer is most commonly characterized by a projection from the boundary of the shadow representing the barium-filled crater of the ulcer, usually on the lesser curvature. The "niche," as it has been designated, is continuous throughout with the boundary of the shadow, and if the rugae can be visualized they show a tendency to converge toward the lesion. This description applies to perforating ulcer; occasionally a perforated ulcer is seen in which the crater is beyond the boundary of the shadow; with the patient in the upright position it may even reveal a small air bubble above the fleck of barium. This is spoken of as the accessory pocket, and represents an ulcer that has perforated into the contiguous structures. An *incisura*, indenting the greater curvature of the stomach, is often associated with gastric ulcer, and may vary from a shallow indentation to one sufficiently deep

almost to bisect the stomach, causing hour-glass deformity. Prepyloric narrowing is frequently seen with ulcer on the lesser curvature. Carcinomatous ulcer tends to be flatter than benign ulcer and to have a wider base. "In a general way, ulcers project as an addition to the gastric cavity, whereas carcinomas encroach on the gastric lumen." Whenever the base of an ulcer exceeds 3 cm. in diameter the ulcer is likely to prove cancerous. In some cases it is possible, by palpatory manipulation, to demonstrate a crater which has the appearance of a converging meniscus lens, bordered by a zone of absence of the contrast medium; this has been designated as the meniscus ulcer. Carman, in the revised edition of his book, published in 1920, stated: "There is a small percentage of cases in which the roentgenologic distinction between benign and malignant ulcer is impossible. At operation the lesion is macroscopically an ulcer and only microscopic examination can give final judgment. A small cancer may have an *incisura* as its sole index. Some ulcers of the stomach are malignant. Whether they start as malignant ulcers or change from benign ulcer to cancer, no one knows. Consequently, the medical treatment of gastric ulcer on the one hand, and procrastination against surgery by the patient and physician on the other, may occasionally deprive the patient of the only chance for cure." Subsequent experience in the clinic has proved that there is a small group each year in which the roentgenologic and even macroscopic appearances are those of benign ulcer, but microscopic examination reveals carcinoma. The pathognomonic characteristic of carcinoma of the stomach is the solution of the continuity of the contour seen whenever the contour can be brought into relief. There is sharp demarcation of the normal from the abnormal, and in the region involved by the tumor the contour is markedly narrowed and irregular and the edge has a keen appearance. If one can visualize a knife blade, the cutting edge is the simulant of carcinoma and the back of the blade is that of the normal and the benign lesion.

Seventy per cent of all gastric carcinomas occur in the pyloric end of the stomach and these are predominantly of the scirrhou and the mucoid types. Fungus carcinoma more commonly involves the walls of the stomach, producing multiple, irregular, filling defects as a result of masses of tumor pro-

jecting into the gastric lumen and indenting the contrast medium. The margins of the filling defects in the fungus carcinomas have the same irregularity of outline and keenness of edge as the other two types. Rarely, the fungoid carcinomas will produce large filling defects on the greater curvature. Filling defects of various form are seen comparatively frequently on the greater curvature in roentgenograms. Roentgenoscopic examination with palpitory manipulation will reveal the great majority to be pseudodefects from colonic or other extraneous pressure. True filling defects, deforming the greater curvature, are rare, so interpretation of lesions involving the greater curvature should seldom, if ever, be made on roentgenographic evidence alone. Benign tumors of the stomach are rare, their pathognomonic characteristic is a smooth-margined filling defect and retention of the continuity of the contour at any and all angles and planes of observation. Polypoid carcinomas may show all the characteristics of benign tumors when ulceration of the tumor is absent. Therefore, all interpretations of benign tumor should be qualified with the statement "possibly malignant," and surgical intervention is indicated whenever situation and extent of the involvement indicates operability of the lesion. Extrinsic masses may project into the gastric lumen by pressure on the gastric wall and simulate very closely the roentgenologic signs of benign intrinsic tumors.

The operability or nonoperability of carcinoma of the stomach depends on the extent of the involvement of the lesser curvature and the habitus of the patient. The greater the distance from the *incisura angularis* toward the cardiac end of the stomach, the less chance there is of the surgeon being able to get above the lesion. In the hypersthenic (short, heavy) type of person the stomach on the whole is less accessible than it is in the hyposthenic (long, thin) type. Occasionally the lesion might be operable from this angle, but fixation of the involved portion, suggesting perforation or extension to contiguous structures, might place it in the inoperable class. Hour-glass deformity may result from carcinoma of the stomach, and has a tendency to be of the "dumb-bell" variety. The characteristic sharp demarcation of the margins, and the keen-edged appearance of the involved portion, lend it distinguishing features. A diffusely infiltrative

type may involve the whole stomach, stiffening the walls and narrowing the lumen markedly; this is "leather-bottle stomach," or "linitis plastica." It is generally accepted as carcinomatous and inoperable. The pylorus gapes, and the contrast medium passes rapidly into the duodenum and small bowel. This type, as is also the scirrhouous type, is often closely simulated roentgenologically by syphilis of the stomach. Syphilis never exhibits the sharp demarcation at the edges, and lacks the keen-edged appearance in the involved portions. The same may be said of the hour-glass deformities. A clinical note of differential value is the well-being of the patient, which, in the presence of syphilis, is usually out of all proportion to the extent of the involvement of the stomach. The therapeutic test is of value in retaining the hope of the patient, and nothing has been lost if the course of the disease proves the lesion to be carcinoma. When the pyloric portions are involved by carcinoma, the shadow tends to come to a sharp point, whereas in syphilis more of the lumen is retained or the shadow is globular at its extremity.

The pylorus offers many problems to the roentgenologist. I have said practically nothing of the secondary signs of the various lesions. Some of these are helpful in differential diagnosis, but none is characteristic of a single lesion. All have been overstressed by many observers who have accorded little if any attention to pathognomonic characteristics. The secondary signs have been the substance of verbose reports that have proved "much ado about nothing" to referring physicians and surgeons, and have done much to deprive roentgenology of the appreciation it deserves. Obstruction, or rapid emptying, are merely results of alterations of the pyloric opening by disease or reflex factors. Hypertonicity and hyperperistalsis are stimulated in an attempt to overcome obstruction. Long continued obstruction may wear out the musculature, and hypotonicity, dilatation and retention may result. It is important to determine whether the obstruction is from organic causes or whether it is the result of reflex action. It is infinitely more important to decide whether the lesion is on the gastric or the duodenal side of the pyloric ring.

Lesions on the gastric side are frequently malignant and many more are potentially malignant; surgical intervention is impera-

tive in many cases, and in the group as a whole has produced the best end-results. Lesions on the duodenal side of the pyloric ring are preponderantly benign, and operation is indicated only in selected cases. Peristalsis is absent in regions involved by carcinoma; it is present, although sometimes altered, in regions involved by benign lesions. Retention is seen as a result of both malignant and benign lesions; it is seen as a zone of decreased density of the contrast medium at the pyloric ring. Loss of time and waste of effort result from an attempt to examine a patient who has evidences of marked retention. By placing the patient in the horizontal, prone position, slightly turned on the right side for a varying length of time, emptying will be established and visualization of the pyloric segment will be possible. The lesion can be accurately located and its type determined in the majority of cases. A normal contour of the pyloric antrum with peristalsis passing to the ring, establishes the fact that the lesion is on the duodenal side. If the lesion is on the gastric side, the following conditions may be considered: carcinoma, syphilis, gastric ulcer, hypertrophy of the pyloric muscle, hypertrophy of the gastric mucosa, benign tumor, and prepyloric gasterospasm. The characteristics of carcinoma and syphilis have been described. Gastric ulcer may involve the pyloric segment, and detection of the niche will establish the diagnosis. Ulcer of the lesser curvature frequently is the cause of prepyloric gasterospasm, and when it is present, and an ulcer has not been visualized, the roentgenologist should carefully re-examine the curvature for the niche that may have been overlooked. Occasionally a similar deformity occurs as a reflex effect of disease of the gallbladder or appendix. Hypertrophy of the pyloric muscle may produce a smooth marginated, tortuous deformity of the pyloric antrum, and concomitant partial invagination of the muscle into the base of the duodenal bulb has recently been reported by Kirklin and Harris as characteristic of this lesion. Hypertrophy of the gastric mucosa may produce irregularities of contour and multiple small defects in the shadow of the contrast substance.

Polyposis rarely involves the stomach; when it does, its roentgenologic appearance suggests a bunch of grapes in the defects in the shadow of the contrast substance. Small, pedunculated tumors may arise on

the gastric side of the ring, and may be extruded into the duodenum; these may deform the antrum and cause a filling defect in the duodenal shadow.

The pathognomonic characteristic of duodenal ulcer is the opposite of that of gastric ulcer. In gastric ulcer the niche projects from the boundary of the shadow; in duodenal ulcer, an *incisura* indents the boundary. In a proportion of duodenal ulcers one can visualize a niche, but not sufficiently often to make it reliable as a diagnostic sign. In the majority of ulcers that cause a niche there will be a concomitant deformity of the cap; rarely, with the aid of palpatory manipulation, can a roentgenologist approximate the walls of the duodenum and elicit the barium-filled crater of an ulcer in a cap without evidences of deformity. In cases of recurrent ulcer, the presence of a niche is the only reliable roentgenologic sign of the lesion. Duodenal ulcer involves the first portion of the duodenum almost exclusively. The *incisura* involves the first 3 cm. beyond the pyloric ring. The margins of the *incisura* should parallel one another in duodenal ulcer. The *incisura* may be unilateral or bilateral, so shallow as almost to escape detection, or so deep that it bisects the cap. Experimentally, it has been demonstrated that ulcers occur and heal rapidly. Study of material obtained at necropsy revealed multiple small, cobweb-like cicatrices throughout the duodenum in cases of old, chronic ulcer. These findings explain the many bizarre deformities seen in the duodenal cap, the most extreme of which are almost complete obliteration of all evidence of the first portion of the duodenum. There is definite shortening of the distance from the pyloric ring to the ampulla of Vater, and cicatrization frequently produces unilateral or bilateral pouching. Retention of contrast substance in one of these pouches may be misinterpreted as a diverticulum. True diverticula occur in the region of the ampulla of Vater. Clinically they are of little significance. Remnants of barium in one of the pouches may be misconstrued as the niche of a perforating ulcer. The number of apparent deformities seen in roentgenograms, but proved on re-examination roentgenoscopically to be artefacts, proves conclusively the futility of attempting to make a diagnosis of duodenal ulcer by the roentgenographic method alone. Diffuse duodenitis is a distinct pathologic entity. When there is ede-

ma and thickening of the walls, the characteristic cap-like deformity may be present, whereas a feathery irregularity of the contour of the cap is visualized roentgenoscopically, and the contrast medium passes on rapidly, suggesting extreme "irritability" of the duodenum. Each year, in a small group of cases, duodenal ulcer and gastric ulcer have been found to coexist. Rarely have duodenal ulcer and carcinoma of the stomach been noted in the same case.

In examination of the esophagus by the special technic described, diverticulum is characterized by a smooth-margined dilatation at the pharyngo-esophageal juncture (the introitus) varying in size from 5 mm. to more than 10 cm., and having the distinguishing feature of emptying from the top. With the patient turned to the required angle, the contrast medium will be seen to spill over and run parallel to the expanded shadow around and below the diverticulum. Diverticulum in the lower part of the esophagus is seldom seen; it presents the same roentgenologic characteristics, however. Cardiospasm usually involves the esophagus at or near the cardiac orifice of the stomach, and causes a smooth-margined dilatation which empties through a narrow constriction at its lower extremity. There may be tortuosity of the lower segment, but the smooth margin persists. Strictures are the result of healed ulcer, either simple, tuberculous, or syphilitic, or of trauma, such as results from drinking caustic liquids. The caliber of the esophagus may vary widely, according to the amount of cicatrization and according to the presence or absence of obstruction. Stricture may simulate almost any of the other lesions, but the contour will be retained throughout and will be smooth-margined, although often tortuous, and it empties at its lower extremity. Carcinoma usually involves the middle third of the esophagus and exhibits the characteristic demarcation at its margins, with the keen-edged appearance of the involved portion. The constriction is usually marked, and the amount of dilatation above is variable. Foreign particles of food may obstruct the esophagus and occasionally will simulate carcinoma in their roentgenoscopic and roentgenographic appearance.

Lesions of the small intestine are best demonstrated by the administration of a barium meal, with frequent observation in the first hour after its ingestion. This pro-

cedure is indicated for lesions above the middle section of the ileum.

Lesions of the large intestine are most satisfactorily studied by rectal injection of the contrast medium under fluoroscopic control, with palpatory manipulation of the intestine synchronously with the advance of the opaque substance toward the cecum and ileocecal valve. In early chronic ulcerative colitis, the evidence may be entirely in the rectum; roentgenoscopy has some advantages over proctoscopy when eliciting this evidence; otherwise, proctoscopy is preferable in examination for lesions of the rectum.

Carcinoma is the lesion of the colon most commonly encountered. Any portion of the large intestine may be involved. As in the stomach, any of three types may be present: (1) the scirrhouous or fibrous type, characterized roentgenologically by the napkin-ring filling defect, sharp demarcation at both extremities, and a narrow, fibrous connecting strand; (2) the polypoid type, in which lobulated, cauliflower-like masses project into the lumen and displace the contrast medium, producing a mottled shadow of lesser density, and (3) the mucoid type, which also reveals the sharply defined dissolution of continuity of the boundary at each extremity, with irregularity and narrowing somewhat similar to that of the scirrhouous type, but of greater length and less definition. This third type often will coincide in situation with a palpable mass. Diverticula are frequently seen as small lobulations projecting from the shadow of the contour. Diverticulitis is confined to the sigmoid, and presents a spindle-shaped shadow, the edges of which are serrated on account of the associated spasm and an inflammatory condition of the wall.

Ulcerative colitis of three types is seen: (1) the diplostreptococcic, ordinarily termed chronic ulcerative colitis; (2) the tuberculous type, and (3) the amebic type. Chronic ulcerative colitis commences in the rectum and involves the colon progressively toward the cecum, as a diffuse, symmetric narrowing of the intestine together with diminished mobility and flexibility. The haustral markings are completely obliterated, the colon is definitely shortened, and the splenic and hepatic flexures have disappeared. The contours may appear uneven, fringed, or feathery, owing to extensive destruction of the mucosa, or they may appear mottled as

the result of extensive, diffuse polyposis. In the early stages, the only roentgenologic evidence of the lesion may be local or generalized increase in intestinal motility expressed by hyperirritability of the colon.

Tuberculous ulcerative colitis commonly involves the ileocecal region, near the ileocecal valve, or the cecum and proximal segments of the colon. Roentgenologically, the features are narrowing, hyperirritability and obliteration of mucosal relief with shortening of the segment. The shadow tends to be ragged, with irregularly arranged, jagged prominences and depression. Hyperplastic tuberculosis is often primary in the intestine, is definitely a granulomatous, tumefactive process, and is confined to a relatively short portion of the intestine, usually the ileocecal coil, and is formative rather than destructive. It should be distinguished from neoplastic and other forms of granulomatous involvement rather than from any of the types of chronic ulcerative colitis.

Amebic colitis most commonly involves the cecum and proximal segments of the colon; secondary sites of preference are dependent portions of the intestine. The ileum is practically never involved, although the cecal aspect of the ileocecal valve is often involved; this results in a gaping orifice, due to stiffening of its lips. Obliteration of the haustral markings, shortening, and narrowing, sometimes to almost complete closing of the lumen, have been constant in the cecal segment. Slight manipulation of the ileocecal coil when moderate distention of the cecum is present usually will result in reflux into the terminal portion of the ileum. The roentgenologic aspect of amebic colitis is one of diminished intensity and severity in comparison with that of the other types of chronic ulcerative colitis.

Polyposid lesions of the colon include all sessile or pedunculated growths projecting into the intestinal lumen. Early diagnosis and removal of these is important because of their known tendency for the development of malignant characteristics. Their site of predilection is the rectum and the distal segments of the colon. Roentgenologically they are distinguishable by characteristic mottling, produced by multiple central polyposid projections into the lumen, displacing the contrast medium and creating filling defects in its shadow. Their recognition has been materially aided by adoption of the double contrast method first introduced by

Fischer, and developed in this country by Weber. Thoroughly efficient preparation is a prerequisite to success with this method. After examination by means of the opaque enema, the patient is allowed to evacuate the enema and air is introduced under roentgenoscopic control. If evacuation has not been sufficiently complete, the air will sometimes induce further emptying. Enough of the contrast medium will have adhered to the walls of the colon to allow visualization of its intraluminal appearance and to bring into bold relief the outlines of polyposid masses or other lesions. Stereoscopic roentgenograms afford more leisurely study of the details, and an opportunity for consultation by the roentgenologist, the referring physician and the surgeon. In most lesions of the colon this double contrast method seems to offer a real advance in visualization, and reproductions of these roentgenograms for publication have a quality of detail equal to the finest drawings.

A consideration of the diagnosis of gastro-intestinal lesions would not be complete without some reference to cholecystography in the visualization of pathologic changes in the gallbladder and gallstones. Oral administration of the dye at The Mayo Clinic has been satisfactory in every respect. The sodium salt of tetraiodophenolphthalein, 4 gm., freshly dissolved in 30 c.c. of distilled water, mixed with one glass of grape juice, orange juice, or carbonated mineral water, is taken immediately after a meal that is eaten at the usual hour in the evening. This meal should be substantial, reasonably free of fats, and fats should be withheld subsequently until the gallbladder has had opportunity to fill with dye-laden bile and to concentrate its content. During the period of the examination, the patient should not take any purgatives or any medicines which affect the digestive tract. Breakfast is not allowed, but water, black coffee, or clear tea is permissible. The first set of roentgenograms is made at 8 a. m., and the second set at 10 a. m. The patient is then instructed to take the usual noon meal, but to include with it a glass of milk and cream in equal parts, and to return for the third set of roentgenograms at 1 or 2 p. m. Painstaking technic, particularly in the avoidance of movement of the patient, is a prime requisite. The roentgenographic formula is proportioned to the measured thickness of the patient's body. A target film distance varying from

25 to 28 inches (63 to 71 cm.), a kilovoltage from 70 to 95, and an exposure time of from a half-second to a second are employed, with a standard milliamperage of 80 and a flat Potter-Bucky diaphragm. Complete filling of the gallbladder in the first series of roentgenograms with deepening of the density of the shadow in the second series, and marked shrinking of the volume of the shadow in the third series is interpreted as evidence of a normally functioning organ. If throughout the series of roentgenograms there is a uniform lack of density in the visualized shadow of the gallbladder, with less shrinkage of the volume in the third series, the organ is reported as poorly functioning. The gallbladder may be visualized as a faint shadow that is of uniform density and volume in the films of all series; subsequent examination, without administration of the dye, may prove this to be a nonfunctioning gallbladder with retention, or with thickening and occasionally calcification of its walls. With good visualization of the margin of the liver, kidney and psoas muscle, with no evidence of a shadow in the gallbladder after administration of the dye, and with assurance that the patient has followed all instructions, the interpretation is that the gallbladder is not functioning. Gallstones of sufficient size and calcium content can be visualized as often as they were before the advent of the cholecystographic method. Cholesterol stones of sufficient size cause negative shadows, areas of decreased density in the homogeneous, flat shadow cast by the dye-filled gallbladder. In such cases, the findings are reported as evidence of a normally functioning, poorly functioning or nonfunctioning gallbladder with stones. Gas in the intestine overlying the gallbladder may simulate negative shadows, or may mask the evidence of stones in other shadows. Extraneous shadows, particularly small areas of calcification in the cartilage of the ribs, may offer difficulties in interpretation. Further examination is indicated in all such cases. Kirklin has been able to distinguish between small, negative shadows cast by stones and neoplasms of the gallbladder, particularly papillomas, adenomas, fibromas and myomas, in a considerable number of cases. The shadows of stones change in relation to the general contour of the shadow of the gallbladder, particularly in the third series of roentgenograms. The position of shadows of neoplasms does not

change. Correlation of the cholecystographic observations with the findings in all cases in which operation is performed, and in which inspection of and report on the gallbladder was feasible, has established the fact that the lack of appearance of the shadow of the gallbladder is the most accurate of all the diagnostic signs of cholelithic disease; that in experienced hands the diagnosis of poorly functioning gallbladder as evidence of structural change in the gallbladder is accurate to a high degree; and that the diagnosis of normally functioning gallbladder is the least accurate from the comparative standpoint, but still infinitely more reliable than any other method known.

In this brief summary of the salient points in roentgenologic diagnosis of diseases involving the gastro-intestinal tract, I have purposely stressed the pathognomonic, direct signs and have omitted largely the inclusion of secondary signs. I have given the findings by the roentgenoscopic method. Roentgenoscopy has proved, in experience at the clinic, to be the most rapid, most accurate, and at the same time the most economical, of any single diagnostic method. Examination with the aid of the fluoroscopic screen allows the patient to be turned to any desired angle, in the vertical or the horizontal plane, and palpitory manipulation synchronous with the ingestion of the contrast medium allows approximation of the walls and detection of lesions that might easily be missed in roentgenographic examination alone. Roentgenoscopic examination eliminates misinterpretation of artefacts which have the appearance of filling defects, niches and incisuras. True lesions can be demonstrated by persistence of the evidence in repeated examinations at all angles and in all planes under palpitory manipulation. A minimal number of roentgenograms are made to check the roentgenoscopic findings, and to provide tangible evidence of the lesion for more comprehensive consultation and as a permanent record. Comparison of roentgenographic with roentgenoscopic findings in large series over a considerable period have proved conclusively the fallibility of the roentgenographic method alone. It has proved advisable for the roentgenologist not to have intimate knowledge of the clinical history at the time of his examination, and for correlation of the roentgenoscopic and roentgenographic with the clinical findings to be effected later. The roentgenolo-

gist approaches the examination without prejudice and forms opinions on the basis of observation only. When there is disagreement in the correlation of the roentgenologic with the clinical and with the other laboratory findings, roentgenologic examination is undertaken again, with special effort to elicit or eliminate the lesion suspected. Of a large series of patients, carefully selected by highly trained clinicians as giving evidence of potential gastro-intestinal disease, approximately 70 per cent were negative roentgenologically. The conclusion must be that in the routine material of the average practitioner this percentage inevitably would be higher. Apparently gastro-intestinal symptoms, by far most often, have a functional basis. Although the superiority of the roentgenologic method is recognized, physicians never lose sight of the utility of other methods. The roentgenologist must share the burden with his colleagues; the combined effort of all must be to serve the best interests of the patient.

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#### PROGRESS IN THE CARE AND TREATMENT OF MENTAL DISEASES

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No branch of medicine has been so revolutionized during the last century as that of the treatment of mental diseases. Until well into the nineteenth century, mental disease was regarded not only as an incurable condition, but a disgrace rather than a misfortune. By some it was considered a Divine punishment for personal guilt, or the result of demon possession. In former centuries, as a general thing, nothing was done to relieve the condition of those so afflicted. They were, in fact, treated worse than the greatest criminals, being caged, chained, starved and beaten.

In 1547 the Monastery of St. Mary of Bethlehem in London was converted into an insane asylum, the name being contracted in common speech to "Bedlam." The fact that this term is now used to denote wild uproar and confusion indicates what were the conditions within its walls. The patients in Bedlam were made a public spectacle, like animals in a menagerie, visitors being allowed to inspect the patients on payment of a small fee. Thomas Bowen mentions that

this hospital had drawn two thousand dollars annually from visitors led by vulgar curiosity, who were willing to pay for admission to see the patients.

The same state of things existed in other European countries, the Lunatics' Tower being one of the show places of Vienna. Here also the public were admitted to view the patients on payment of a small fee.

The treatment of these poor unfortunates was no better in America than in Europe. The Pennsylvania Hospital, which opened in 1772 and received mental patients, experienced considerable difficulty on account of the annoyance of these patients by the public. Later the public was notified "that such

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persons who come out of curiosity to visit the house should pay a sum of money, a groat at least, for admittance."

Many of the mentally sick, if violent, were locked in the barns or sheds of county almshouses; or, if harmless, they were kept with the other inmates or sometimes auctioned off to the lowest bidder for pauper care.

The French physician Philippe Pinel is celebrated in medical history as the pioneer in the treatment of the mentally sick in a humane manner. On visiting them at Bicêtre in 1789 he was impressed with the disastrous state of affairs in this hospital, and when later he was put in charge he proceeded to inaugurate drastic reforms. In 1798 he released many of the patients from the mechanical restraints to which they had been subjected.

"It was," says Semelaigne, "a jubilee initiative of the reign of mercy. Eighty lunatics who had long been galled by chains were set at liberty. And it is mentioned that the very act of liberation, affecting the mind as other powerful impressions, restored many of them to tranquillity if not to sanity."

At about the same period, in 1794, the Quaker William Tuke built a home or "retreat" at York, England, where mentally sick persons might receive humane and reasonable treatment. This action was the result of abuse to which a young woman belonging to the Society of Friends was subjected during her confinement in the York asylum, where she died. Subsequent investigation revealed a most deplorable state of affairs.

The work nobly begun by Pinel and Tuke was continued in France by Esquirol and others, and in England by Gardner Hill, Conolloy, and others. In 1839, Conolloy, in the face of bitter opposition, discarded all mechanical restraints at the Hanwell Asylum, where 800 patients were confined. Seclusion and the padded room were substituted for the straight jacket and other mechanical restraints.

The Friends' Asylum for the mentally sick at Frankford, Pennsylvania, claims to be the first institution "erected on this side of the Atlantic in which a chain was never used for the confinement of a patient."

Virginia is entitled to the credit of being the first Commonwealth to furnish state care for mental cases and furnish adequate protection for them. The first institution de-

signed and used exclusively for mental diseases in this country was the Eastern State Hospital at Williamsburg, Virginia, opened in 1773.

Miss Dorothea Dix was, more than any other person, responsible for the inauguration of state care of the mentally sick throughout the United States. Undertaking in 1841 to give Sunday School instruction to the female inmates of the East Cambridge House of Correction, she found twenty women, among whom were several mentally sick, crowded together in one filthy room in which no provision was made for bedding or heat. Shocked at her discoveries, she set out on a tour of inspection, visiting jails and almshouses throughout the state of Massachusetts. She then memorialized the Massachusetts legislature, with the result that the existing asylum was enlarged to make provision for the mentally sick confined in jails and almshouses. Miss Dix is credited with having memorialized 22 different state legislatures on this subject, and to have been instrumental in the founding of no less than 32 asylums. State hospitals for the mentally sick are now to be found in every state without any exception.

The state hospitals were for a long period merely places for the custodial care of the mentally afflicted, rather than for the clinical study and treatment of mental diseases. Weir Mitchell in 1894 called attention to the absolute lack of scientific care of the mentally sick in American hospitals. "We have done with whip and chains and ill usage," he said, "and, having won this noble battle, have we not rested too easily with having made the condition of the insane more comfortable?"

*The Psychiatric Hospital.*—So great a change, however, has taken place since that day that at the present time the former "insane asylum" has become the "psychiatric hospital" operating on much the same lines as the general hospital. As Copp pointed out:

"The mental hospital and the general hospital are essentially alike. Mental factors predominate in the former, but are potent influences in the latter. The difference is one of degree only. All the imperative requirements of the one must be met by the other. They are supplementary agencies in alleviating and curing disease and must be eventually viewed in the same light and admin-

istered in the same spirit on even planes of humaneness and efficiency."

In harmony with this ideal, the requirement for mental hospitals now includes "directors for clinical psychiatry, pathologists, internists, surgeons, dentists, and specialists of various kinds. Experts in hydrotherapy, massage and electrical treatments are necessary, as well as dietitians, industrial instructors, occupational teachers, specialists in re-educational work, psychologists, social workers, etc." They have long passed the stage of purely custodial care and have developed into highly specialized modern hospitals of the most advanced type.

Among the various causes that have led to the great reform movement in the treatment of mental cases, possibly the most important was the change of view with regard to the etiology of the disease, it being now recognized as a disorder of the body and brain that may be compared with other bodily ills, yielding to treatment along the same lines. The causative effect of physical disorders upon mental states is now clearly recognized, as well as the effect of the mental state upon the body. This interrelationship of mind and body and their effect one upon the other makes necessary the services of the psychiatrist in the general hospital and of skilled specialists in the treatment of bodily disorders in the mental hospital. "No hard and fast line can be drawn between the two."

For this reason, Dr. Franklin G. Ebaugh, of the University of Colorado, emphasized the necessity of combining a psychiatric outlook with a physical outlook and using this approach in all clinical work. "When the present-day expectations of psychiatric teaching are realized," says Dr. Ebaugh, "we can expect that the general practitioner and internist will have skill and interest in the early recognition of mental disease, that the school physician will have, in addition to his ability to diagnose and treat rickets, an equal ability in the recognition of personality disorders in children, and that every student will leave the medical school with a workable understanding of the clinical and therapeutic and public health aspects of mental disorders."

It being recognized that a mental disorder may be partially or entirely due to physical causes, the removal of which will clear up the mental disturbance, some states now have "observation clinics" in which pa-

tients are kept for a time before commitment. The patient is carefully studied from every point of view, given a thorough physical examination with the necessary x-ray work and laboratory tests, dental and visual defects corrected and all foci of infection sought for and removed if possible. Pope has emphasized the importance of focal infections as a cause of mental aberrations, and the almost magical clearance of the mind which the removal of these foci may occasion, and since many borderline nervous or mental defects can be readily alleviated by a short period of study and treatment, actual residence in a hospital for mental diseases is often avoided. This is of special importance in view of the fact that, although there has been some progress in breaking down prejudice with regard to abnormal mental states, much still remains to be overcome. The popular notion still persists to some extent that mental illness is more or less of a disgrace, and commitment to a state hospital under legal restriction leaves a stigma that remains even after the recovery and release of the patient.

New regulations have recently been made in England to save sufferers from mental disorders from the still existing prejudice. The Mental Treatment Act aimed at putting the treatment of mental disorders on the same footing as the treatment of bodily disorders, with out-patient clinics, observation wards for early cases, and, more especially, the development of the "voluntary patient" system. It has been possible since the working of the Act for patients to be received in any public or private mental hospital without certification or reception order. A further novel feature of the new method is the "temporary patient" system whereby patients incapable of volition and likely to benefit by temporary treatment are also admitted to mental hospitals without certification. Consequently they are under no legal restriction or disability, as is the case with certification for commitment to a mental hospital. Similar arrangements obtain in many of the hospitals of our own country.

How different and how much more humane and effective are our present day methods of the care and treatment of those who are mentally ill!

Space will not allow here a detailed description of the examination and treatment of all the different forms of mental diseases. The following is a brief outline of the

methods of examination and treatment usually followed by the writer.

*Methods of Examination.*—The physician should approach all cases of mental illness "psychobiologically." The examination of patients naturally divides itself into two parts: (1) the physical examination; and (2) the examination of his mental condition.

In the first place, a careful history of the case should be obtained. The family history should be carefully inquired into, particularly with reference to any nervous, mental or constitutional disorder in his ancestors or blood relatives.

The patient's past history should be carefully inquired into to look for any previous acute or chronic illness. The presence of any infectious diseases, either acute or chronic, should be carefully looked for, especially any syphilitic infection. Careful inquiry should be made as to whether or not the patient has had any previous attacks of any kind of mental disorder or a history of a so-called "nervous breakdown." In some forms of mental illness, such as the manic depressive psychoses for instance, the patient may have had previous attacks from which he has recovered.

The present complaint of the patient both as to any physical ailment that he may have as well as his present mental illness, time of onset and a statement of the leading symptoms in the order of their occurrence and severity, should be recorded, also history of any injuries to the head at any time, including injuries at childbirth.

Following the history-taking as above outlined, the patient should have a physical examination of all of the organs of the body. Special attention should be given to the examination of the head as to shape or asymmetry, scars on scalp, tenderness on pressure, x-ray of the head when indicated as to condition of cranium, deformities, sella turcica, sinuses and mastoid, any history of purulent discharge from ears, examination of nose, throat and sinuses for any infection, inflammation or other troubles. A culture should be made from the throat and tonsils when indicated. Also an examination of the mouth including tongue, teeth, and x-ray of teeth should be made when indicated.

A careful examination of all of the other organs of the body should be made. It is

not necessary here to enter into a detailed description of this. It is also important to make careful laboratory examinations of all of the different secretions, excretions and fluids of the body, including the regular blood count, differential blood count, chemistry of the blood, metabolism test, serological examination of the blood, and in certain cases of the spinal fluid, particularly for any evidence of syphilis or any other organic disease of the nervous system.

A neurological examination should be recorded under a separate head. It is important to have a regular plan and order of making the examination so that no points will be overlooked. It is well to begin at the top and work downward. In this examination inquiry should be made as to headaches; their location, character, and cause should be sought for, also the length of time the patient has suffered with them. There should also be inquiry as to the following symptoms: Dizziness, heaviness, or any other peculiar feeling in the head, character and amount of sleep, and physical endurance. Inquiry should be made for any worries or any emotional depression or failure in memory. Details of these should be worked out more fully in the mental examination. Examination of the special senses should be made. The acuity of vision, errors of refraction, diplopia and nystagmus, condition of the pupils, whether equal, unequal, or irregular in outline and their response to light and accommodation should be recorded, and an examination of the fundi oculi. The ears also should be examined as to acuity, diminution or loss of hearing, also in certain cases an examination of the vestibular apparatus and labyrinth of the inner ear. The condition of smell and taste, mastication, deglutition and speech should all be examined. Observation should be made as to the patient's gait, posture, and movements, and any abnormalities recorded. Observation should be made for any abnormal movements, paralysis, ataxia or incoordination of any movements or muscles of the body, and strength of the paralyzed muscles carefully tested with the dynamometer. The deep and superficial reflexes should be examined and a record made of any pathologic reflexes. Cutaneous sensations should be carefully tested for touch, pain and temperature impressions, also deep sensibility including vibratory sense, joint sense and muscle sense, also the presence, location and

character of pain or paresthesias or any other abnormal sensations.

*Mental Examination.*—A single mental examination or observation is not sufficient in every case. In some cases it is necessary for the physician to make several observations at different times. It is not always best, especially in certain cases, to arrive at a positive diagnosis until the patient has been under observation a sufficient length of time for him to exhibit all of his different symptoms.

In making the mental examination a definite outline should be followed which takes into account all the mental symptoms, behavior and conduct of the patient so that nothing will be missed. In some cases, particularly in cases of children and in patients who are mentally retarded, a psychometric test should be made and the patient's intelligence quotient determined. In some cases a psychoanalysis should be made.

*Treatment.*—There is probably no department of medicine that has made greater progress than has been made in the care and treatment of patients suffering from mental disorders. A great deal more can be accomplished by our modern methods of treatment than was formerly believed possible. In the treatment of these cases careful supervision as to all details is necessary. The location of buildings where they are confined is very important, and should be so constructed as to give the patient the greatest amount of physical comfort. The room should be well ventilated, well lighted and cheery, the furnishing neat and adequate for comfort, and the decorations, etc., should not be in any way depressing. The buildings should be in a healthful location, the surrounding pleasant, and the grounds ample. The grounds should contain trees, shrubbery and flowers, and should be made attractive in every way. Sometimes the patients can be placed in a ward with others, but very often it is better to have them in private rooms.

The treatment of the patient may be divided into two parts: (1) the treatment of physical ailments; and (2) special mental or psychologic treatment. These two, of course, can proceed at the same time.

(1) *Physical Treatment.*—The treatment of any physical ailments that the patient may have would, of course, be indicated by the examinations that have already been made. It is very important that all

sources of toxemia and infection be removed. For this reason, as formerly stated, the patient's nose, sinuses, teeth, alimentary tract, including the gall bladder and genitourinary system, should all be carefully examined for any possible infection or the source of any toxemia. The alimentary tract especially should have careful attention. The teeth should be well cared for and a toothbrush used after each meal, and some antiseptic mouth wash used to keep the teeth and mouth clean. The services of a dentist, of course, should be used whenever indicated. It is very important that the patient's diet be carefully regulated so that the blood is kept normally alkaline and he should have the requisite vitamins, and the food elements in the right proportion to nourish his body and to help him gain or reduce weight as indicated. The regulation and control of the bowels and freeing the bowels of putrefactive bacteria are often very important in cases of mental illness.

Probably in no department of medicine is the use of the various forms of physiotherapy more effective than in the treatment of mental disorders. The different forms of hydrotherapy, electrotherapy, heliotherapy, massage, outdoor exercise, special exercises under a medical director, rest, and all of the different forms of physiotherapy, can be used in the treatment of mental disorders to the very best advantage. These different remedies, of course, should be selected according to the needs of the patient and should be directed by the physician and carefully applied by the nurse or attendant. A great deal of skill may be shown on the part of attendants in the administration of the different forms of physiotherapy and the results obtained very often depend to a large degree on the manner in which the different treatments are applied to the patient. Cases that may be suffering from any form of syphilis should, of course, have proper antisiphilitic medicinal treatment.

The use of drugs, especially sedative drugs and hypnotics, may sometimes be necessary in the treatment of these cases, but the writer has been using the above mentioned physical remedies in the treatment of a large number of these cases and resorting to hypnotics or sedative drugs has very seldom been necessary.

(2) *Mental Treatment.*—In order that the mental treatment may be carried out successfully, it is very essential that the phy-

sician should have a thorough understanding of the patient's mental condition, and as far as possible of his feelings and emotions. In other words, he should understand his patient. Many sufferers from mental disorders are misunderstood by their friends. They very often look well, and it is difficult for the friends to understand how they are suffering. They think that if they will only just snap out of their trouble they will be all right. In many cases this snapping out of trouble is quite impossible on the part of the patient and he needs the help of the physician and nurse to get readjusted. A physician who can enter into the patient's feeling and have an understanding of his mental state is the one that can give him the most help. It is always necessary that the physician take considerable time to interview and converse with his patient and endeavor to correct any erroneous ideas, and to counteract his emotional depression or the opposite,—emotional exaltation, overactivity, etc.—whenever present.

In the treatment it is a good plan for the physician to have a very definite daily program for the patient to follow. This should include the different forms of treatment, periods of exercise, periods for rest, and everything that might be considered a part of the patient's daily program. In applying what might be considered the mental treatment, of course, many of the other physical remedies that may be used in treating the patient will also have their mental effect and really become part of the mental treatment of the patient. Occupational therapy by which the patient is directed to do certain definite things or make certain articles often forms an important part of the mental treatment of the patient and is very valuable in certain cases.

#### CHRONIC NONSPECIFIC ARTHRITIS: ETIOLOGY AND TREATMENT, WITH ESPECIAL REFERENCE TO VACCINE THERAPY

BENJAMIN H. ARCHER, New York, believes that there appears to be a basis for the concept that both rheumatoid arthritis and osteo-arthritis are due to the same etiologic agent or group of agents and that the proliferative and degenerative pathologic changes by which the two types manifest themselves are the result of other factors than those of causation. There seems to be no conclusive evidence of the presence of streptococci in the blood and joints of patients with chronic arthritis. None of the vaccines employed at the present time in the treatment of chronic arthritis have been accepted by the Council on Pharmacy and Chemistry. There is no evi-

In certain cases a psychoanalysis may be necessary. It is important for the physician to select and determine the particular cases that might be benefited by such a treatment, as in many cases of mental disorder a psychoanalysis is not indicated and would do no good, while in others it might accomplish much good. Selection of a proper nurse for the care of these patients is also very important. The nurse should have special training in the care of such cases. As far as possible nurses should be selected that are adapted to the needs of each particular case, as mental cases differ, and a nurse that might be adapted to one case would not fit well into the needs of another.

The methods outlined have been used by the writer for many years in the treatment of a large number of patients suffering from mental disorders. They have been modified and changed from time to time as seemed indicated by the advancement of our experience and knowledge. The writer has found that the proper use of the above mentioned methods and remedies gives excellent results in the treatment of patients suffering from different forms of mental illness. Many cases can be definitely cured and others which may not be cured can be greatly benefited and made more comfortable.

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dence at hand that they exercise any specific effect on the course of the disease. Dietary regulations and vitamin therapy apparently exercise no specific effect on the joint manifestations of patients with this disease. In those cases associated with foci of infection it seems wise to search for and remove this factor early in the course of the disease. In advanced cases the measures that the author has found to be of greatest benefit to the patient are orthopedic procedures, physical therapy, the administration of drugs to allay pain and a change of climate. Present knowledge of the subject does not seem to warrant the view that certain definite measures should be applied only to certain definite types of arthritis. There is no conclusive evidence that the same measures do not apply at some time to all forms of nonspecific arthritis.—*Journal A. M. A.* (May 5, 1934).

## A SIMPLIFIED DIABETIC FOOD TABLE\*

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There is general agreement that a knowledge of food values is essential to diabetic patients. Average individuals have little conception of the relative amount of carbohydrate in even the common articles of diet. Without such knowledge, persons having diabetes either live with no consistent diet restrictions, or are on more or less fixed formulæ. While the latter are preferable, such diets become very monotonous. This often stands in the way of strict coöperation and satisfactory results. Moreover, such prescriptions lack the desirable feature of easy adjustability.

Few doctors are able to outline a diabetic diet beyond the mere notation in grams of carbohydrate, protein, and fat. Some have not had the necessary training, and the others cannot afford the time required. For these reasons the information and way of applying it has, except for a few patients having unusual intelligence and leisure, been obtained from trained dietitians generally available only at the better hospitals. This bars many, for financial reasons, lack of time, or dread of hospitals, from ever availing themselves of the facts and instructions so essential to their continued well-being.

Many of the severe diabetic patients who take advantage of this training find the diet getting out of hand in times of stress. They lose confidence in themselves, look to the physician for help without its forthcoming, and so are hospitalized over and over for readjustment. Discouragement and depletion of funds often occur to exaggerate the seriousness of a situation, already difficult.

Those who have acquired the technic of setting up their own food prescriptions often find it time-consuming. When away from home the task may become impractical. In many instances this has led to abandonment of the calculated, weighed, or measured diet, and rapid loss of ability to resume it.

The generally accepted method of filling diet prescriptions and computing their value is not, except in wards devoted to research, sufficiently accurate to justify the expense, and time required by the average patient to master the details. Table I is a compilation from Atwater and Bryant's "The Chemical Composition of American Food Materials" showing the normal variation of carbohydrate, protein, fat, and water in common foods. It makes evident the errors which

may arise even with careful calculation and weighing of diets.

There is an evident need for simplified diabetic arithmetic and food tables. The method of prescribing a diet should be so simple that it could be done by any doctor in his office. Every patient who can read should be able to understand and execute it without the necessity of hospitalization. If such were the case fewer doctors would shirk their responsibility, and more persons having diabetes would be under supervision.

TABLE I.—VARIATIONS IN THE PERCENTAGE OF CARBOHYDRATE, PROTEIN, FAT, AND WATER IN SOME COMMON FOODS.

FOOD	C	P	F	W
Beef—cooked				
Roast				
Minimum	15.1	19.6	38.7	
Maximum	29.0	41.4	59.5	
Round Steak				
Minimum	19.4	3.3	53.5	
Maximum	34.1	16.9	72.3	
Egg—boiled				
Minimum	10.3	9.1	68.6	
Maximum	16.8	14.4	79.9	
Cottage Cheese				
Minimum	16.1	.4	67.0	
Maximum	25.7	1.6	77.0	
White Bread				
Minimum	47.6	6.8	.4	29.8
Maximum	58.0	11.0	3.5	40.4
String Beans				
Minimum	5.1	1.7	.2	83.5
Maximum	12.6	2.8	.4	91.7
Carrots				
Minimum	6.5	.7		83.1
Maximum	13.8	2.0	.7	91.1
Onion				
Minimum	4.2	.2	.1	81.5
Maximum	15.5	4.4	.8	95.2
Apple				
Minimum	8.8	.1	.1	77.3
Maximum	21.3	.8	1.4	90.9
Banana				
Minimum	16.3	1.0	.0	66.3
Maximum	29.8	1.6	1.4	81.6
Orange				
Minimum	11.6	.8	.1	80.0
Maximum	18.5	1.1	.3	88.3

\*Read before the Kent County Medical Society, April 12, 1933.

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TABLE II.—CHART SHOWING ARBITRARY VALUE GIVEN TO STANDARD PORTIONS OF FOOD.

FOOD	STANDARD PORTION		COMPOSITION		
	HOUSEHOLD MEASURES	GRAMS	C	P	F
Coffee, tea, cocoa shells, spices, condiments, salt, agar, India gum, saccharine, flavors, washed bran, vinegar, thrice cooked vegetables, mineral oil, clear broth.	Any amount				
Cider, carbonated drinks, beer, ale.	1/2 glass	100	10		
Sugar, syrup, honey, jams, jellies.	2 teaspoons	10	10		
Fruits (fresh or canned without sugar)	1/4 average size	50	10		
20% Bananas	1 "				
Plums	1 "				
Prunes	1 "				
Prunes (dried), figs	1 "	15			
15% Apples, pears	1/3 average size	65	10		
Cherries	20 average size				
Blueberries, raspberries, currants	2 1/2 h. tablespoons				
Apricots	2 average size				
Apricots (dried), dates	2 "	15			
10% Oranges, lemons, peaches	1 average size	100	10		
Pineapple	1 slice or 2/3 cup				
Strawberries, blackberries	4 h. tablespoons				
Cranberries	7/8 cup				
5% Grapefruit	1 average size	200	10		
Cereal products (dry)			15	10	2.5
	Barley				
	Oats				
	Rye				
	Rice				
	Hominy	x			
	Corn				
	Wheat				
Whole		1 1/2 tablespoons			
Meel		1 1/2 "			
Flour		2 "			
Flakes		1/2 cup			
Puffs		1/4 "			
Bread		2 x 4 1/2 inch slice			
Crackers		2 (3 x 3) "			
		2 x 4 1/2 "			
		1/2 "			
		5 tablespoons			
Buckwheat flour		2 "			
Potato "		2 1/2 "			
Tapioca		2 1/2 "			
		2 1/2 "			
		2 "			
		2 "			
		1 "			

It is evident that simplification of food tables can be accomplished in only one way. That is, by assigning to related foods an average common value for a mean standard portion. Table II represents such a chart. Similar articles of diet are grouped. Standard portions are recorded in household measures and grams. They are of practical size, comparatively few in number, and the values assigned in grams are 2.5, and 7, or their multiples.

Such a chart has many practical advantages. It simplifies and reduces greatly the number of factors to be remembered. A food prescription can be set up or adjusted very rapidly and the addition becomes so easy that it ceases to be a task.

Table III shows how a diet prescription for 115 grams of carbohydrate, 85 grams of protein, and 147 grams of fat may be worked out from the chart (Table II). It is easiest, perhaps, to fill the carbohydrate requirement first. Proceeding from above

downward among the groups listed as containing carbohydrate (viz., beverages, sugars, fruits, cereals, vegetables, milk, nuts, and cream), selections are made till the prescribed total is reached. In this instance they are as follows: two portions of 10 per cent fruit, two of cereal, two of 20 per cent vegetable, two of 5 per cent vegetable, three of milk, and two of 20 per cent cream. This gives the amount of carbohydrate, 115 grams, designated in the order. In addition it has supplied 40 of the 85 grams of protein, and 49 of the 147 grams of fat necessary to complete the prescription.

The next step is to make up the protein deficit of 45 grams by selection from the foods containing only protein or protein and fat (viz., cheese, eggs, gelatin, shellfish, fish, meat, fowl, and certain nuts). The choice made in filling the prescription is as follows: three portions of cheese, one of egg, four of meat, and one of bacon.

There remains only the necessity of sup-

TABLE II (Continued)

FOOD	STANDARD PORTION			COMPOSITION		
	HOUSEHOLD MEASURES	GRAMS		C	P	F
Vegetables (fresh or canned without sugar)	20% Potatoes	½ average size	50	10	2.5	
	Baked beans	1 h. tablespoon				
	Green corn	1 h. " or ½ ear				
	Shell beans	1½ tablespoons	15			
	15% Peas, parsnips, Lima beans, Jerusalem artichokes.	½ cup	70	10	2.5	
	10% String beans, pumpkin, turnips, beets, Kohlrabi, squash, carrots, onions.	1 cup	150	10	2.5	
	5% Tomatoes, brussel sprouts, okra, leeks, Watercress, seakale, cauliflower, globe, Broccoli, eggplant, artichoke, cabbage, Radishes, ---lettuce, cucumbers, spinach, Celery, asparagus, rhubarb, endive, Marrow, sorrel, sauerkraut, beet greens, Dandelions, mushrooms, Swiss chard.	2 cups	300	10	5	
	Whole	1 glass	200	10	5	7
	Skim	1 glass	200	10	5	
	Butter					
Cheese	Cottage (skim milk)	2 tablespoons	30		5	
	Other types	1x1x2 inch piece	20	5	7	
Egg		1	50	5	7	
Gelatin		1 2/3 teaspoons	5		5	
Shellfish			30	5	7	
Fish (cooked)	Add ½ tsp. butter or fat per portion:	1x1x2 inch or ½ cup	20	5	7	
Meat and meat products (cooked)	Shellfish-all Fish-all except canned mackerel, sardines, and tuna Pork- Beef- Mutton or Lamb- kidney kidney kidney liver tripe liver lung veal lung heart dried sweetbread steak (lean)	3x2x½ inch slice	20	5	7	
Fowl (cooked)		3x2x½ inch slice	20	5	7	
Bacon (cooked)		4-6 strips	30	5	14	
Sausage (cooked)		4-6 small				
Nuts, etc.	Almonds, beech, cashew, filberts, peanuts, Hickory, pistachios, walnuts, (cocoa, chocolate)		20	5	5	14
	Brazil, butter		25		5	14
	Chestnuts, lichi		15	5		
	Cocoanut, pecans		20	5		14
	Olives	10-15	75	5		14
Cream	20%	5 tablespoons	75	2.5	2.5	14
	40%	2½ " "	40			
	Butter, oleomargarine, fats, oils, mayonnaise (1 pint of oil, 1 egg, and seasoning)	1½ tablespoons	15			14

plying 28 grams of fat from the last group on the chart as the 115 grams of carbohydrate, 85 grams of protein, and 119 of the 147 grams of fat required have already been selected. This is accomplished by adding two portions of butter or salad dressing.

Any further additions to the diet in the form of drinks, seasonings, fillers, and the like may be taken from among the articles in the first group on the chart which have essentially no food value.

Division of the prescription into three meals occurs after the daily total requirement has been recorded to avoid the use of fractional portions. This preserves the simplicity of the calculations. It is, of course, essential to have the allotment of articles of

diet in mind when the selection is made in order to insure their propriety at any given meal. The distribution in this particular prescription is indicated in Table III in portions.

Of course, unless such a food chart gives reasonably accurate totals even simplicity cannot justify its use in writing prescriptions. In Table IV the values in a series of diets computed from arbitrary figures in Table II and from those in the food table of Joslin's "Diabetic Manual" are compared. When normal variations, as seen in Table I, are remembered, it would seem that differences in calculated value may be within the range of unavoidable error, and in many instances the agreement is surprisingly close.

TABLE III.—A DIET PRESCRIPTION.

Food	Portions	Value			Meals		
		C	P	F	B	L	D
Fruit, 10%							
Orange	1	10			1		
Peaches	1	10					1
Cereal							
Bread	1	10	2.5		1	1	
Oatmeal	1	10	2.5				
Vegetable, 20%							
Potato	2	20	5.0				1
Vegetable, 5%							
Tomato	2	20	10.0				1
Cabbage							
Celery							
Lettuce							
Milk (whole)	3	30	15.0	21	1	1	1
Cream, 20%	2	5	5.0	28	1	½	½
Cheese	3		15.0	21		3	
Egg	1		5.0	7	1		
Meat	4		20.0	28			4
Bacon	1		5.0	14	1		
Butter or Salad Dressing	2			28		1	1
	Total	115	85.0	147			

TABLE IV.—COMPARISON OF VALUES (GRAMS)  
SECURED BY ACCURATE COMPUTATION (A)  
AND BY THE USE OF TABLE II  
(B) IN A SERIES OF DIETS

	C	P	F	C	P	F
A	54.4	35.0	64.0	127.1	81.9	146.8
B	55.0	32.5	56.0	130.0	82.5	140.0
A	64.0	41.6	72.0	137.6	83.3	146.8
B	65.0	37.5	63.0	140.0	85.0	140.0
A	74.0	52.2	78.0	147.8	84.5	146.8
B	75.0	47.5	70.0	150.0	87.5	140.0
A	84.0	64.4	90.9	156.2	90.3	156.1
B	85.0	60.0	84.0	160.0	92.5	154.0
A	94.2	70.2	96.6	161.2	89.7	182.1
B	95.0	67.5	91.0	165.0	95.0	175.0
A	109.4	76.0	102.3	196.7	93.0	142.9
B	110.0	75.0	98.0	170.0	90.0	140.0
A	116.9	80.1	132.8	182.2	93.4	196.3
B	120.0	80.0	126.0	195.0	100.0	189.0

The chart is presented after successfully using it in a charity hospital without the services of a dietitian, in a charity clinic, and in private practice. There is the belief that it is sufficiently simple, practical, and accurate for general use among diabetic patients who cannot avail themselves of the service of a dietitian familiar with diabetic arithmetic.

#### SUMMARY

- Very careful computation of the diabetic diet is futile because of the normal variation of carbohydrate, protein, fat, and water in foods.
- It is difficult or impossible for many people to use existing food tables intelligently in making up a diet prescription.
- A food chart is presented, which simplifies the filling and computation of food prescriptions both for the doctor and the diabetic patient, without sacrificing reasonable accuracy.

## SUPERFICIAL AND PUNCTATE KERATITIS\*

### IS IT ALSO A DEPRESSION ENTITY?

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Saradindu Sanyal, M.B., Calcutta, in the May, 1933, issue of the *American Journal of Ophthalmology*, gives a description of the first epidemic of superficial keratitis at Calcutta during the monsoon period, showing five types of corneal involvement and other variations from the form reported by Wright in Madras. Sometime after the stock market debacle of 1929, with wages being cut and lessened working hours for the employed, I began to experience, in increasing numbers, industrial patients who were experiencing corneal and conjunctival irritation. These patients increased in number, and the nature of the superficial corneal wounds so varying and symptoms so inconsistent, I began to question this as the possible source, for in these cases I was unable to find any foreign bodies, either in cornea, conjunctiva or cul-de-sac. Some of these patients would still complain of the presence of the irritation after being away from work for as much as a week. The irritation possibly would not be so great, but the corneal picture under stain would be much the same as on the previous visit. When one of these patients complained that he got a blast in one eye, and I was unable to find any emery dust or other cause of irritation except the staining of the cornea, I then used the fluorescein stain, or it combined with mercurochrome, and would as a rule find the same staining condition in the other eye, sometimes milder and sometimes the staining would be more intense. With these abraded corneas, I was surprised that there was so little photophobia and lachrymation. This is the point that caused me to feel that I was dealing with an entity not of a traumatic nature.

As time progressed, I began to see patients whom I had refracted fairly recently and who were in no way exposed to dust or other irritants, who experienced blurring of vision and irritation when using the eyes. Many of them complained of general lassitude. Some complained that a film seemed to come before the vision when using the eyes, but no discharge; some awoke at night to find the eyes moist, and a dry and gritty feeling of the lids in the morning. In other patients, the eyelids seemed stuck together on awakening, but there was no

discharge during the day, little or no photophobia, but a feeling that grit or something was in the eyes. As the period of the depression has lengthened, the intensity of this condition has appeared more virulent in sporadic cases.

### CASE HISTORIES

On April 2, 1932, B. L. K., aged forty-six, complained of eyes being sore and inflamed, also of having styes frequently since the first of the year. At the present he has photophobia and lachrymation, a feeling as if sticks were in his eyes and he is unable to do his work comfortably. The lids were stuck together in the morning, but the eyes feel better and look better Mondays than any day of the week. This is possibly due to rest and being away from his work as an upholsterer. In this case there was considerable congestion of the bulbar and palpebral conjunctiva, flaky scales on the lid margins and at the roots of ciliæ. The cornea took a general, but variable, stain, scattered groups and punctate dots. The pupillary area as a rule was less involved than the periphery. The conjunctiva showed a generalized roughening of both eyes. Local treatment for two weeks and a correction of refractive error did not relieve him of his discomfort or the pathology. The corneal staining appeared like the northern lights, brighter in one section and next time, seeing the patient three or four days or a week later, the bright areas would be shading out and other areas taking the darker stain. This patient remained with me for a month and then went to another specialist of his own nationality who was generous enough to call me about the patient and asked what I would suggest.

In early May, 1932, I had a high school student with an inappreciable refractive error who had bilateral suppurative blepharitis marginalis, photophobia and lachrymation, and a bilaterally staining cornea, which I, at the time, accredited to x-ray treatment of the lid margins. I am now inclined to think the lid condition was a secondary condition and the corneal condition the exciting cause and not of x-ray production. More than a year later his cornea still took a variable, but not a punctate, stain.

On August, 1932, I refracted a woman of sixty-nine, who, six weeks later, had the condition in both eyes in such a way that it was impossible to use the eyes, deep staining of cornea; generalized staining of conjunctivæ, pain, photophobia and lachrymation for six weeks or more; in fact, I was not making her comfortable and she became discouraged and I saw her no more.

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On December 3, 1932, Dr. H. C. Wolfe asked me if I would see a patient of his whom he thought caught pink eye from his child who was sent home from school. The patient, a market attendant of thirty-two years, had been confined to his home in a darkened room for nearly a week with intense pain in his eyes, photophobia and lachrymation, the condition not responding to treatment. A corneal ulcer was feared, and I was called. The condition did not present the picture of acute contagious conjunctivitis, nor was an ulcer present, but the cornea and conjunctiva of both eyes took a deep stain. I treated the condition and prescribed for home treatment and asked to be called if the condition did not respond. I was called four days later and at this time found an ulcer  $2.5 \times 2.5$  mm. of the left cornea just below the pupillary area, the right eye considerably improved. The mother and two boys, five and seven, also had the eye condition in a milder form. It required nearly three months of careful treatment before healing was complete, hypopion developed and an infiltrating exudate developed in the stroma of the cornea under the bed of the ulcer, requiring a partial Saemisch operation before healing would take place. Ten months and more have elapsed since the acute onset in this case and the right cornea still takes the stain, but less with each visit, the last visit a generalized staining with no observable punctæ.

While the former ulcer patient was still under treatment, Mr. C. R. H., aged fifty-five, was referred to me December 28, 1932, with a central, left corneal ulcer, the eye having bothered for about six weeks. The vision was poor in this eye from previous attacks of what he considered might be the same condition, which formerly had responded to home treatment. This eye, however, became so painful he came for relief. I found a central ulcer of the left cornea  $4.5 \times 5$  mm. implanted on an old corneal scar, signs of hypopion present and an inverted mushroom shaped accumulation of exudate behind the ulcerated area and extending into the anterior chamber. The patient insisted on palliative treatment, which I complied with for two weeks and then advised an operation. That was the last I saw of the patient for eight days; in the meantime he had gone elsewhere for help and returned a physical wreck with a continuous headache. The latter may have been due to the eye condition or an old specific infection, 4+, he harbored. As he was in intense pain, I gave him a hypodermic of morphine, unwisely, for I shortly learned that he was an old morphine addict and I had that to contend with before his recovery.

I performed a Saemisch operation, evacuating the anterior chamber of the exudate, with immediate benefit, but later threatened, and scheduled the eye for enucleation in order to take away the imaginary pain that only morphine relieved. Local and constitutional treatment was employed for nearly four months to clear up the ulcer, and when last seen (ten months later), the cornea of the right eye still took the stain in a less degree than formerly.

I have had several others of these patients since with corneal ulcers, more superficial than the two just referred to, that cleared up in two or three weeks' time, but still leaving the cornea that took the superficial sheen or punctate stain.

On February 18 of this year, S. G., twenty-eight, an industrial patient, was referred for a diagnosis call, claiming that a day or so before he got a dust blast in his eyes and they had been discharging since. At the time I saw him, he had a profuse

stringy discharge in both eyes, having all the characteristics of acute gonorrhea, little swelling of the lids, and very little photophobia. I stained a smear of it and found a few scattered diplococci, extracellular. I also sent another to the State Health Laboratory, receiving a negative report, and also had the discharge cultured with a negative report. It was not gonorrheal because the discharge lessened promptly with treatment, but the cornea and conjunctiva still took the characteristic stain of the epidemic condition at the time and also more than two weeks later when last seen.

On June 2, 1933, J. M., aged forty-one, went to bed with no physical complaint of any nature and awakened in the morning to find vision hazy. When later looking at objects, he found he had double vision that necessitated closing one eye in order to see clearly. About 10 A. M. he reported at the office with a tendency to double vision due to a paresis of right internal rectus muscle. Double vision cleared up before the day was over. Negative urine, blood taken and reported negative. Had no complaint of feeling unwell in any way previous to awakening on the morning of June 3. I placed him on free elimination and asked him to report three days later when I could report on the blood. At this time I checked over his eyes and found they had apparently returned to their normal balance. There was no complaint of photophobia or lachrymation, but there was a slight amount of congestion of the bulbar conjunctiva, and in using the stain the left cornea took a superficial uniform green sheen, the right cornea showed a single superficial punctate dot on the nasal side in the pupillary area, a green sheen of the cornea with a slightly deeper staining area in the nasal quadrant. No complaint of photophobia or lachrymation.

On this same date, June 8, 1933, Mrs. H. R., aged fifty-one, of Holland, came to this office, not because of great discomfort with her eyes, but because she had shown patients to another office in the building. As I had treated her for a non-specific irido-cyclitis of the left eye about a year previous, she wanted to see whether her glasses were still satisfactory. When I last saw her at the end of the former treatment, she still had some photophobia which had continued and which she now thought was a weakness left from the old trouble. As her husband had not worked for more than one and one-half years, she put up with the discomfort of photophobia, lachrymation and irritation she experienced in using her eyes, rather than be an expense. The eyes checked fairly closely with present glasses. The lids and bulbar conjunctiva were injected, lids not swollen, a mucopurulent discharge at right internal canthus with a stringy tenacious plug of it protruding from the upper puncta; pressure over sac caused no regurgitation. She has had a partially obstructed tear duct on the right side for years. The left eye showed much old pathology on the posterior surface of the cornea, and in the deeper stroma refractile bodies like fine grains of sand, and on the posterior surface of the cornea one large and a half dozen smaller disks of pigment. The cornea of both eyes took a deep stain as did the conjunctiva, patches punctæ, singly and in groups, the left cornea showing a conglomerate punctate grouping in the pupillary area and a deeply staining cornea. Under a week of local treatment, the discharge of the right eye let up, the cornea stained but faintly, while the cornea of the left showed numerous punctate staining areas scattered over its surface. The adjustment of financial and family worries has reacted beneficially.

I have a number of cataract patients who manifest this condition in a mild or aggravated form. Mrs. C. C. S., aged sixty-one, bilateral senile cataracts, vi-

sion reduced to 20/40 and 20/200 with correction. She has experienced considerable photophobia, lachrymation and congestion of bulbar and lid conjunctiva, but no swelling of the lids. I have observed the condition of the cornea for nearly a year and have had her under local and constitutional treatment. The corneaæ have taken a variable stain at every visit, much improved at times, but the last time I saw her the corneaæ took a more intense stain than at any previous visit; clouds, sheen and punctate, singly and in groups. She said her eyes were much worse after prolonged mental anguish to which she has been exposed during the past year, the last shock having been recently.

Mrs. G. B., bilateral senile cataracts. Vision reduced to light and shadow and 20/70. Has been under observation for nearly four months with a superficial condition of corneaæ, more of generalized discrete punctate condition. Treatment directed mainly at the eye with a mature cataract has caused the cornea to clear up almost entirely; the other cornea still takes a variable stain.

Mr. O. R., bilateral senile cataract, with bilateral corneal involvement. Mature cataract of left eye and an acute progression in right. He has been under observation for over four months because of photophobia and lachrymation and difficulty in seeing. Both corneaæ take a deep stain, variable punctate grouping, discrete and cloud-like staining. The conjunctiva bulbar and lids are injected. The disturbed vision of this patient is his greatest discomfort. With a correction in the right eye, he sees 20/40 hazily, but reads Jager 3 and 4 about 8 inches. With +1.00 + 50 x 60 he reads 20/20+ for distance but must bring reading matter still closer than that without correction.

In others of these numerous patients who have taken the corneal stain, I have found that some have complained of intense itching of the lids externally; the skin may be dry and parchment-like with flaky fine dandruff-like scales at lid margins and on side of nose. Others complain of a watery discharge that produces an excoriation of the skin at the external canthus. These patients sleep, in greater part, lying on the affected side, the tears leak out producing the scalding and chafing that is aggravated by the wiping of the eyes, thus producing the unilateral eczematous eruption occasionally observed in these patients.

The characteristics of this condition have been variable in ages from five to ninety years. Males are affected as much as females; marked photophobia and lachrymation have been observed in only a small percentage of the cases. Sticks or roughening, as if grit or some foreign body were in the eyes, is a frequent complaint. Discharge, stringy, purulent in nature, has been observed in two and several others more recently. Flaky, dandruff-like scales on lid margins and on surface of skin at internal canthus, have been observed in nearly all, also a dry, gritty feeling of lids in the morning. The more aggravated complained of the lids

being stuck together on awakening. Smarting and burning in children has been the predominating complaint.

I have experienced occasional complaint of pain in the eyes or brow pains in patients who have, or have had, gripe or head colds, while other members in the same family have not been indisposed, have no complaint, but who have this same eye pathology in some form. Others complain of headaches on using the eyes; others, vision seems blurred with or without glasses. Several presbyopic patients complained that they could see better to read with distance glasses than through the reading portion; one senile cataract patient who formerly required a 50 cylinder axis 75 now requires a +1.00 50 x 60 to give normal distance vision, while for reading it brings his reading point inside of 10 inches. Formerly, his presbyopic addition was a +2.00 sphere.

Pericorneal injection is not observed in the mild cases and there has been very little injection of the lid and bulbar conjunctivæ unless there is also conjunctival involvement. In the milder cases the corneal stain may not be seen with focal illumination and the loupe, but is demonstrated with the hand or larger slit lamp. Other of these cases may show a superficial staining (sheen-like) in one eye and sheen and punctate areas of staining in the other. Single or scattered punctate areas in the pupillary area do not seem to interfere with the vision, while grouping or conglomerate masses may interfere to a slight degree with distant vision, and, if centrally located in pupillary area, does produce a blurring for close work. In the industrial patients I have observed a greater variety of superficial staining of the cornea; sheen, punctate, seldom clouds, but striae (hair-like), extending from the upper limbus to lower, passing through pupillary area, shorter striae mostly from upper or lower limbus and radiating toward pupillary area, then again, scroll or hook-like striae near or in the pupillary area. None of these striae seem elevated and none of the staining areas suggest being elevated in any of the cases, unless it be in the group punctate or the conglomerate punctate which later may become one of the dense, cloudy, areas of staining. This elevation is mainly due to an accumulation of mucus and debris on the surface.

I have not observed a tendency to anesthesia of the cornea. Mild medication may

produce a smarting or irritation when dropped on the eye. No change in anterior chamber or its contents except in two ulcer patients, no appreciable change in tension and no iris pathology unless there has been other complications. I have not observed that the eye condition has had an antecedent cause such as grippe or colds, and sinus involvement has been ruled out in some of the aggravated cases. Laboratory reports and findings have been of a negative nature. The thick discharge shows pus cells and breaking down epithelial cells with a few scattered extracellular diplococci observed in one. Other Michigan doctors report the negative laboratory findings in this condition as suggested in the (May 13, 1933) *Journal of the A. M. A.* under Querrie and Minor notes, the editor suggesting "Angular Conjunctivitis" and due to the diplobacillus of Morax and Axenfeld.

The eye condition that is in epidemic form in this section undoubtedly falls under the description "A form of Superficial Keratitis," first described by Fuchs, 1889. It is unlike that of the epidemic reported from Calcutta in that this involves both eyes (the condition does not clear up promptly) and only in one or two cases observed has the discharge been of an acute nature. The two severe cases of ulceration of the cornea might fall under the type described by Wright, involving the entire thickness of the cornea. I have seen two, possibly three, of the 1 and 2 type as that described by W. L. Phillips, in the *Annals of Ophthalmology*, January, 1913. One was free of this discomfort when he got away from the stock on the farm; on a heavy sultry day, when working about the horses, the eyes would be worse. One was relieved when she quit working in a beauty parlor, and the third was associated with a hair dressing establishment; condition improved as soon as contact was broken. These are suspiciously of allergic nature, but of dissimilar pathology to what we are observing and were in people beyond fifty years of age. In younger children, I have observed the sheen, but not the punctate staining, but in older members of the same family who claim no discomfort, I have observed both sheen and punctate staining. Some of the cases receive prompt relief from local treatment, while others receive but little benefit. The nervous type seem to be more susceptible to this condition than

those of the phlegmatic type, systemic treatment apparently has not produced benefit, and local treatment, while beneficial, does not promptly clear up the corneal pathology.

In 1931 about 15 per cent of eye patients from one industrial plant complained of eye irritation from dust blasts. In 1932 about the same percentage, with men sticking closer to their work and the attendant in the first aid sending in patients whose irritation persisted. For the first half of 1933, this has jumped to nearly 25 per cent. This condition has become evident in the general run of patients during the past year and its incidence has been multiplied during the past trying four months. As many as seven of these patients have been seen in my office in the course of one day and I found it very prevalent in the City Eye Clinic during the month of May.

As to the etiology of this condition, I do not think it due to fomites nor do I think it due to infection; were it so, local and constitutional treatment would be more beneficial. If only symptoms complained of were to be considered, eye strain would be the natural conclusion. In the case of B. L. K., allergy might be considered, for shortly before he began to have eye trouble, the shop, of which he was part owner, received a consignment of a new kind of moss which he had been using in his work. The improvement of his eyes after being away from his work for several days would partially bear out my reasoning.

This condition may be due to nutritional disturbance in the young individuals and to a neurotrophic disturbance in the older. This depression has brought nerve strain, has brought economy in conscientious individuals and economy in food selections that may result in avitaminosis in the younger individuals and neurotrophic disturbance in those of the nervous type. The attitude of mind aids or hinders the digestion and assimilation of food. It is recognized that one beset with fear, anxiety, or worry, may literally starve in the midst of plenty. Francis Roy Cooper has said, "Trouble is an ounce or an atom depending on how we take it." We know that worry hastens the visit of the grim reaper.

The condition was first observed in industrial patients because of a possibility of injury, which thus gave me an opportunity to observe the pathology, knowing the social condition of these patients; scarcity of

work, reduced wages, home, auto and furniture, etc., bought on the installment basis certainly has produced a nervous strain. Gradually financial losses, reserves consumed, bank holiday, and the condition with us is an epidemic. Those who take life seriously and those of the nervous type seem most susceptible. With worry lessened, work more prevalent and improved financial conditions, I am finding an improvement in

the condition with medical treatment more responsive.

#### MEDICAL ARTS BUILDING

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## WHOLE BLOOD TRANSFUSIONS AS A TREATMENT FOR SEPTICEMIAS IN CHILDREN\*

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The first recorded blood transfusion for the treatment of disease was performed at Rome, Italy, in 1492. The patient was Pope Innocent the Eighth; the disease, old age. The incident is referred to in Merejkowski's<sup>3</sup> "Romance of Leonardo da Vinci" and it seems not out of place in a romance. Clendenning<sup>1</sup> refers to it in his usual pithy fashion—"the treatment was one hundred per cent successful, the donors and the patient died." Garrison<sup>2</sup> believes the record to be apocryphal.

Credit for the first authenticated human transfusion is given to Denys<sup>2</sup> of Paris, France, in June, 1667, and for the second to Lower<sup>2</sup> of Cornwall, England, in November, 1667. Hans Buchner in 1889 discovered the bactericidal effect of blood serum, but it was not until the twentieth century after the work of Landsteiner, Maragliano, Eisenberg, Jansky, and Moss that the way was cleared for the routine use of blood transfusions as a recognized and safe therapeutic procedure.

Unger<sup>5</sup> deserves the credit for the development of a greatly simplified apparatus for the transfusion of whole, unmodified blood. Citrated blood transfusions have been found to be useful in various conditions requiring the restoration of a depleted blood supply but have not appeared to be of great value in combating infection. It has been demonstrated that in citrated blood, opsonins, the phagocytic power of white blood cells, and the complement are diminished, and an anti-complementary reaction is produced.

It is our purpose in this paper to record our experience in the treatment of demonstrated sepsis with whole, unmodified blood transfusions. This may be regarded as a preliminary report, as the small number of cases we have treated precludes anything but general conclusions. It has not been our

good fortune to have had the opportunity to try autogenous immuno-transfusions because of the overwhelming character of the infection in the cases presented below, and the difficulty and expense of maintaining heterogenous immunized donors in this small community has precluded the use of this method of transfusion therapy.

#### CASE HISTORIES

*Case 1.*—This case has been previously reported by one of us.<sup>4</sup> Donald O., aged five years and five months, was sent to the hospital December 11, 1930, with a provisional diagnosis of septicemia following a nasopharyngitis and cervical adenitis of three days duration. On admittance his temperature was 105.4°, blood count 17,500 w.b.c., with 77 per cent polymorphonuclears. Three days later the count was 20,750 w.b.c., and 83 per cent polymorphonuclears. The urine showed no pathology. He was given an immediate whole blood transfusion of 250 c.c. and this was repeated every other day for a total of four transfusions. Three donors were used, one for the first two transfusions, and one each for the third and fourth. Repeated blood cultures demonstrated the presence of staphylococcus albus in the blood stream. Following the fourth transfusion the child's blood culture produced no growth, the temperature dropped to normal and he made a complete recovery without localization of the infection. Diagnosis, staphylococcus albus septicemia.

*Case 2.*—Joan Z., aged three years, was seen at her home after a nasopharyngeal infection of three days duration. At this time her temperature was 105.4°, she was delirious, and a very obvious peritonitis was present. She was immediately hospital-

\*From the pediatric and surgical staffs of St. Joseph's Mercy Hospital, Pontiac, Michigan.

ized. Her blood count showed w.b.c. 11,500, 84 per cent polymorphonuclears. Her urine contained albumin, hyalin and pus casts and a few red and white blood cells. We felt the peritonitis was probably due to septicemia and to confirm this an abdominal paracentesis was done. Direct examination of the peritoneal fluid revealed a pure suspension of long chain streptococci which culture demonstrated to be hemolytic. Blood culture done at the same time demonstrated the presence of the identical organism in the blood stream. A transfusion of 250 c.c. of whole blood was given. The patient died thirty-six hours after admittance to the hospital of an overwhelming hemolytic streptococcal septicemia.

*Case 3.*—Mary M., aged nine years, was seen at the hospital July 9, 1932. Her temperature was 105°, w.b.c. 6,500, 67 per cent polymorphonuclears. The urine showed no pathology. She had been ill for five days with a high fever and chills without evidence of localization of her infection. In the past twenty-four hours she had begun to complain of pain in her legs. She appeared acutely ill and very toxic. A provisional diagnosis was made of septicemia with probable early osteomyelitis of the right femur, and confirmed by blood culture which was taken immediately, and by operation on the right femur two days later. At this time x-rays failed to show any bone pathology but at operation a small amount of pus was found after drilling through the cortex over the mesial aspect of the junction of the middle and lower thirds of the right femur. This pus on culture produced a pure growth of non-hemolytic streptococcus identical with that obtained by blood cultures. A transfusion of whole blood of 360 c.c. was given on July 20, 375 c.c. on July 25, 350 c.c. on July 29, and 400 c.c. four weeks later. Blood cultures were negative after the first transfusion. The osteomyelitis ran a stormy course necessitating two more operations but the child is now well. Diagnosis: Non-hemolytic streptococcal septicemia with subsequent localization in osteomyelitis of the right femur.

*Case 4.*—Charles S., aged five years, was first seen at the hospital March 2, 1933. According to the history given by the mother he had been ill for about two weeks with a cold and cervical adenitis. Four days before admittance his right ear drum ruptured spontaneously. Two days later he complained of severe abdominal pain and vomited everything taken by mouth up to the present time. Temperature on admittance 105°, w.b.c. 30,400, polymorphonuclears 95 per cent. The urine contained albumin, hyalin casts and a few red and white blood cells. Examination revealed a very ill child with a suppurative right otitis media and peritonitis. An abdominal paracentesis was done and on direct examination the exudate was found to contain a pure suspension of short chain streptococci. This was confirmed later by culture. A blood culture taken at this time produced the same organism as found in the peritoneal cavity and streptococci were also found upon culture of the purulent discharge from the right ear. One whole transfusion of 250 c.c. was given shortly after admittance and because of the persistent vomiting 500 c.c. of 5 per cent glucose was given intravenously on the second day. The child's temperature dropped gradually to normal in the succeeding five days, then fluctuated between normal and 101° for the next three days, after which it remained normal. The urine cleared up completely and the child made an uneventful recovery and was discharged the eighteenth hospital day. Diagnosis: Nonhemolytic streptococcal septicemia with peritonitis and right suppurative otitis media.

*Case 5.*—Andrew D., aged seven years, was seen

at home May 18, 1933, in a stupor. Eight weeks previous he had had measles and contracted whooping cough four weeks later. He was still coughing. He had repeated attacks of asthma and allergic rhinitis during the previous three years. He was sent to the hospital immediately. The same day he developed a flaccid paralysis of all extremities and the right side of his face, with evidence of a partial bulbar palsy. Temperature on admittance 100°, w.b.c. 23,500, polymorphonuclears 56 per cent. The urine contained hyaline and granular casts, a trace of albumin and a few red and white blood cells. His spinal fluid showed a moderate increase of sugar and globulin but the cell count was well within normal limits and the fluid produced no growth on culture, and guinea pig injection showed no evidence of tuberculosis. He was given a blood transfusion of 300 c.c. shortly after entrance to the hospital. A blood culture taken previously developed a growth of short chain nonhemolytic streptococci and a diphtheroid organism which was not identified. Another transfusion of the same amount as the first was given on the third day. The stupor persisted for five days, after which the sensorium began to clear rapidly. The paralysis of the left side cleared rapidly, while that of the right side improved slowly. The child was discharged fourteen days after admittance with some right sided palsy of the face and extremities which disappeared in the next four weeks, that of the face being the last to disappear. Diagnosis: Diffuse myelo-encephalitis with a septicemia of nonhemolytic streptococci accompanied by an unidentified diphtheroid organism.

*Case 6.*—Dale R., aged seven years, was first seen at home November 27, 1933. His mother stated that he had been hoarse three days previously but had not had any fever until the last six hours. His temperature was 104°, but there were no localizing signs or symptoms except a mild nasopharyngitis. Twenty-four hours later his temperature was 107°. He was sent to the hospital with a provisional diagnosis of septicemia. On admittance his blood count showed w.b.c. 28,400, polymorphonuclears 92 per cent. The urine contained albumin, hyalin and granular casts, and a few white blood cells. He was immediately transfused with 300 c.c. of whole blood. A blood culture taken before transfusion produced a pure culture of nonhemolytic streptococci. The child's temperature dropped gradually in the first twenty-four hours following transfusion to 101°, then rose slowly during the next twenty-four hours to 103°. At this point another transfusion of 300 c.c. of whole blood was given. During the next three days the temperature dropped with slight fluctuations to normal and remained there. The child was discharged seven days after admittance to the hospital and remained in bed one week at home. There were no complications and the urine cleared up completely without further treatment. Diagnosis: Nonhemolytic streptococcal septicemia.

*Case 7.*—This is not a case of septicemia but is included to show the characteristic findings of abdominal paracentesis in a peritonitis requiring surgical intervention in contrast to a peritonitis of septicemia.

Richard A., aged two years, was seen at the hospital September 12, 1933. According to the history given by the mother the boy had been ill for three weeks with intermittent pains in the abdomen, which had become continuous for the past two days. Everything taken by mouth had been vomited the last forty-eight hours. No temperature had been taken. On admittance the child's temperature was 101.4°, w.b.c. 17,500, polymorphonuclears 90 per cent. The urine contained hyaline casts. Examination of the patient showed an ill child with a generalized peri-

tonitis, probably due to ruptured appendix. An abdominal paracentesis produced a purulent fluid which showed many *B. coli* on direct examination, these findings confirmed by culture. The diagnosis pre-operative was then a general peritonitis from a ruptured appendix. This was confirmed by operation. Fortunately the child made an uneventful recovery without any further specific treatment and was discharged well, seventeen days after admittance.

#### SUMMARY

Six cases of septicemia in children are presented, of which five recovered. The one death occurred thirty-six hours after admittance to the hospital and was the only case of hemolytic streptococcal infection in the series. One case was due to *Staphylococcus albus*, three to nonhemolytic streptococcus and one to an infection with a nonhemolytic streptococcus and an unidentified diphtheroid organism. Two of the six cases had a generalized peritonitis demonstrated by abdominal paracentesis and examination of the abdominal fluid both directly and by culture. The sole treatment in all six cases was by transfusion of whole, unmodified blood, except for supportive measures, and operation in the one case of osteomyelitis. A case of peritonitis due to a ruptured appendix is included for comparison of the findings in the peritoneal fluid in this type of peritonitis with that of peritonitis due to septicemia.

#### CONCLUSIONS

1. Successful treatment of septicemia in children depends on early diagnosis.
2. Whole unmodified blood transfusions repeated as often as indicated, which may be daily or every other day, appear to be very useful in combating this type of infection.
3. The amount of blood given at one time will vary with the size and age of the recipient but should approach the maximum for the particular patient.
4. If expected results are not forthcoming after any one transfusion, a new donor should be selected for the next.
5. Abdominal paracentesis and examination of the peritoneal fluid obtained, offers a simple and valuable aid to differentiation between the peritonitis of septicemia and that due to intestinal pathology.

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## DICK TESTS AND DICK TOXIN

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This is a summary of the results in the use of Dick tests and Dick toxin over a period of four and one-half years at Cranbrook School. The average population of the school has been two hundred boys, their average age 14.6 years. All have been Dick tested. Only those results are included where boys have been at the school for two successive years.

A study of the usefulness of Dick tests and toxin will consider the value of this method in preventing scarlet fever; it will also judge the cost of acquiring this immunity in the form of reactions.

#### THE VALUE OF DICK TOXIN IN PREVENTING SCARLET FEVER

The results from the use of Dick toxin are shown in the Table. Each Dick test has been repeated at the interval of one year following immunization. The average percentage of immunity is 69 per cent. This figure is modified by natural forces affecting immunity, *e.g.*, a certain percentage of Dick

positives will turn negative without injections, likewise a certain percentage of Dick negatives may become positive. This corrected percentage of immunity is 77 per cent. In the year 1929-1930 in which a sixth dose was given, the immunity at the end of the year was 89 per cent. In other years only five doses were given.

That the Dick toxin is an efficacious prep-

## RESULTS FROM DICK TOXIN AT THE INTERVAL OF ONE YEAR

Year	5 or 6 Immunizing doses	Average S.T.D.	Per Cent Turning Dick Neg.	Control Series			Corrected Per Cent Immunity
				Cases	— to +	+ to —	
1929-30	43	131,275	93	96	6%	10%	89*
1930-31	29	115,500	55	91	30%	3%	82
1931-32	20	115,500	60	68	18%	1%	77
1932-33	13	157,100	69	42	1%	10%	60**
Averages	105	129,844	69	74	14%	6%	77

\*The sixth dose given this year.

\*\*The fifth dose given in two injections: 40,000 S.T.D. and 80,000 S.T.D.

aration is already established. Further evidence is offered here in the absence of a single case of scarlet fever in the school in these four and one-half years.\*

In estimating the full value of the Dick preparation it is necessary to recognize the existence of a partial immunity that is conferred, and which may exist in the presence of a positive Dick test. The presence of this latent immunity is well-demonstrated in eight boys who had in the preceding year (1930) received five full doses, without converting a positive Dick reading to a negative. In 1931, each boy was given 10,500 U. (one-eleventh of full Dick dosage), and of these eight boys, six became negative in the fall of 1932, showing that prior to the last injection of 10,500 units the threshold to complete immunity had almost been crossed; and disclosing in these few cases, at least, the existence of a *partial immunity concealed in a positive Dick test*.

In a review of 33,000 cases<sup>1,2,5,7</sup> receiving five and six immunizing doses, there is recorded only one case of scarlet fever, an incidence of .00003. This very low figure suggests that great numbers of individuals have been given more than adequate dosage, and that substantial reductions in the total of Skin Tests Doses, regardless of Dick tests, would confer a satisfactory (if not absolute) degree of immunity. The reports of Reed and Tellier<sup>6</sup> include a series of twenty-three cases given only 2,000 units, with 86 per cent immunity.

Stallybrass,<sup>9</sup> using 7,000 to 26,000 units, in several school groups, greatly reduced the incidence of scarlet fever. In twenty-one boys at Cranbrook, injections were discontinued (because of reactions) before the

\*One case was reported from home in June, 1933. This boy had shown a negative Dick test the preceding September; he had not received the Dick toxin.

fourth or fifth dose (an average dose of 30,000 units). At the year-interval, fourteen, or 67 per cent, were Dick negative; the duration of the immunity, however, was shorter lived. In the presence of an epidemic it seems necessary to carry the inoculation to the point of a negative Dick test; as a purely preventive measure, designed to offset the usual exposures to scarlet fever occurring during childhood, we might well be content with a lower dosage of Dick toxin.

## THE COST OF ACQUIRING IMMUNITY TO SCARLET FEVER

The types of reactions encountered were of two distinct varieties: (1) the usual scarlatinai signs and symptoms; (2) certain allergic symptoms. During the first, second, third, and fifth year of injections the reactions manifested themselves in malaise, headache, scarlatiniform erythema, edema of the face and eyelids (rarely with albuminuria), and arthritis. A given vial of Dick toxin often produced a crop of like reactions, e.g., edema or erythema.

During the fourth year the presenting phenomena were wheals, scattered swellings, tachycardia, apprehension, pain and pressure within the chest, flushing of the skin especially of the face and chest, followed rather promptly by a mealy desquamation. In two instances the swelling progressed from one region of the body to another over a period of two weeks. At the end of the third dose 14 per cent of the boys had shown this variety of reaction, and, although the preparation of Dick toxin was changed, lesser reactions continued to occur.

Evidence that this reaction was allergic in character is further offered in comparing the frequency of reactions in boys with a

known allergic tendency and those without this tendency. Twenty-five per cent of the boys who reacted to the toxin gave histories of hay fever, eczema, horse-serum reactions or a previous injection of Dick toxin. Only 15 per cent of the others, the normal group, were sensitive to the Dick toxin.

The average illness (requiring absence from school) was two-thirds of a day for a series of five immunizing doses. The severity of the reactions was reduced by using two to three m. of adrenalin with each injection, by resting in the afternoon, and eating a light supper; in 1932 the fifth dose was divided into two smaller doses. It was found that boys showing severe reactions in the earlier doses continued to react to the fourth and fifth injections. It is interesting that the severity of reactions increases from childhood (one-tenth<sup>3</sup> to one-fifth of a day) through adolescence (two-thirds of a day) to the adult<sup>4,8</sup> (one day or more). Reduction in the number of reactions through refinement of the preparations now on the market, or through intranasal or enteral administration is to be desired.

#### CONCLUSION

That Dick toxin is of great value in preventing the appearance of scarlet fever in

a boarding school where the relationships among the boys are uninterrupted and intimate, and all are within the age-group of susceptibles to scarlet fever. No scarlet fever has developed in the school during the four and one-half years of the inoculations. The average immunity at the interval of one year is 77 per cent. Reactions, both scarlatinal and allergic, are encountered; the average of total sickness for five doses is two-thirds of a day.

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### BILATERAL NEPHROSTOMY ON ACCOUNT OF LIGATION OF BOTH URETERS FOLLOWING VAGINAL HYSTERECTOMY

#### CASE HISTORY

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Mrs. E. W., aged sixty-six, was admitted to Harper Hospital in 1910. Her history up to that time was irrelevant, aside from the fact that she had had a perineorrhaphy elsewhere about ten years before her entrance to the Hospital.

Examination showed a moderately prolapsed uterus with cystocele, with classical carcinoma of the cervix. The uterus was not fixed, so that it seemed advisable to perform a vaginal hysterectomy, which was performed with the usual technic.

There was some scar tissue present from the previous operation. The operation, which consisted of removal of the uterus and entire adnexa and as much perimetrial tissue as possible, was easily performed.

The patient did well after her operation, but it was noted that she did not void urine, since about 5 c.c. of urine only was passed after the operation. We felt that it was possible that we had tied the ureter on each side. When a catheter was passed we were unable to obtain urine, and were convinced that this was the case. There was no drainage from the vagina except normal secretions following such an operation, so we felt that the ureters had not been severed. After forty-eight hours the patient suffered considerable pain in her back so that it was felt that a bilateral nephrostomy should be performed, which was done, with local anesthesia, in the patient's bed. The kidneys were both swollen and as little manipulation was done as possible. The field of operation, however, was made more access-

ible on account of the swelling of the kidneys. Each kidney was punctured in several places, when there was a marked escape of urine immediately. Large hot boric acid compresses were placed over the incisions; urotropin, grains 10, three times a day was given. Urine continued to drain from each side, requiring dressing changed every three or four hours for four days; during this time patient was catheterized daily. On the fourth day after operation about 40 c.c. were found in the

urinary bladder; each day up until the tenth day the urine increased. On the tenth day after operation urine was practically normal, although somewhat scanty, and the 14th day after operation patient was passing a normal amount of urine, but no urine drained from incisions after this time. The nephrostomy wounds were entirely healed in three weeks. The patient had no marked difficulty, was

quite well, and died November, 1933, at the age of eighty-nine years.

This case is cited for the importance of handling a case where the ureters have been tied. Number two plain catgut ligatures had been used. This is the only case so far as we know on record at Harper Hospital, where this procedure had been followed, and our first and last case in which the ureters had been ligated.

## OCULO-GLANDULAR TULAREMIA

### CASE REPORTS

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Tularemia in Michigan is not such an uncommon disease; 12 cases were reported in 1933, 21 in 1932, and 6 in 1931. Whether any of these were of the less frequent oculo-glandular form similar to that which I report, I do not know. The involvement of the cornea in these cases is quite rare.

*Case 1.*—A polish male, seventeen years old, gave a history of having shot a rabbit November 5, 1933, while out hunting. The rabbit was cleaned by a brother three days later and eaten the same day. None was eaten by any other members of the family. Five days later the patient awoke with redness and swelling of the upper left lid more pronounced in the temporal half. By evening it had become much worse. The eye was sensitive to light and the patient began having chills.

The next day, November 14, he came to the office for an examination complaining of frontal headache, weakness and aching of the arms and legs, also tenderness and swelling of the left eyelid.

Physical examination showed a well developed male with the appearance of being quite ill. He had 104 degrees temperature. His left upper eyelid was red, swollen and drooping so that there was difficulty in elevating it to examine the conjunctiva. The latter was chemotic and red only in the upper temporal quadrant, involving both the palpebral and bulbar conjunctiva in this area. He complained of marked tenderness of the tissues overlying the lachrymal gland, giving one the impression of an acute dacryoadenitis. The pupils reacted to light and accommodation, vision 20/20 O.U., fundi normal. The preauricular gland on the left was swollen and tender, about an inch in diameter. There was also considerable swelling of the left submaxillary and deep cervical glands. The ears were normal and there was only a slight congestion of the nasopharynx.

The patient was sent to the hospital, where examination showed the heart, lungs, abdomen and extremities to be normal.

Laboratory findings: X-ray showed no involvement of the bony orbital ridge. Bilaterally the ethmoidal sinuses were slightly hazy. The leukocyte count was 16,400; urine normal. A smear from the conjunctiva was negative for organisms.

Clinical course: The patient's temperature on admission to the hospital was 104 degrees. This dropped each morning with about 2 degrees rise each afternoon. There was an increased elevation of the temperature on the fifth day, at which time a trace of albumin and casts were found in the

urine. Four grayish ulcers appeared on the palpebral conjunctiva. They were about two millimeters in diameter extending along the tarsal border of the upper left lid. A smear from the ulcers was negative. After this date the temperature gradually dropped to normal in a week's time.

During the third week he complained of pain in the distal portion of the biceps muscle with palpable left axillary glands. At this date he began having a slight rise of temperature. The next day the left eye showed a chemotic swelling on the limbus between two and four o'clock with redness of the conjunctiva extending temporally in a fan shape. The report was received on the blood at this time showing positive agglutination for tularemia; negative blood culture and negative for syphilis, typhoid and undulant fever.

The next day a similar fan shaped conjunctivitis appeared in the opposite eye extending nasally to include the caruncle and the same chemosis along the limbus for 5 mm. Both eyes cleared in about ten days.

During the sixth week he developed a maculo-papular rash on the right cheek. Several days later the left submaxillary gland had to be incised, after which time the temperature remained normal. During the ninth week the right eye had a recurrence of the bulbar conjunctivitis involving the same sector nasally. And on the cornea four discrete punctate maculae appeared at three and ten o'clock resembling the lesions seen in superficial punctate keratitis. There was inter-palpebral redness of the conjunctiva adjacent to the lesions. A week later the lesions were much improved. The blood at this time showed positive agglutination in dilutions of 1:1280. When last seen on March 3 he had a circumscribed maculo-papular rash on the upper lip about 2 cm. in diameter. Otherwise he was feeling well and the eyes were giving him no trouble.

*Case 2.*—Brother, one year younger, of patient cited in Case 1, was not examined until February 13, but states that he cooked the rabbit eaten November 8. Six days later he had chills so severe he could scarcely do his farm chores. He did not report it to his family, however. He says he had fever for

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about three weeks, worse about 2 P. M. He also complained of night sweats. One week after onset of fever his hands and feet broke out with red pimples. This lasted about one week. He says he has had several recurrences of the rash since then. Twelve weeks after onset of disease a general examination was negative. His eyes were normal and there was no evidence of cervical adenitis. Blood examination showed positive agglutination of tularemia in dilutions of 1:1280. His temperature was normal.

March 3, when last seen with his brother, he reported that two days previous his right eye became bloodshot. Examination showed three nodules in the limbus about 0.5 mm. in size which stained with fluorescein, located at nine o'clock on the limbus. There was a conjunctivitis extending temporally from this lesion to the outer canthus. The cornea was clear. Two nodules seen on the palpebral conjunctiva did not stain. He also had another skin eruption on the face at this time.

#### COMMENTS

Case 1 is unusual in several respects: first, because of the involvement of the lachrymal gland and adjoining structures simultaneous with the other glands on the same side of the head, but without any manifest lesion as a portal of entry to the lachrymal gland;

secondly, the involvement of the cornea at about the same time as the skin lesions later in the disease with all the appearance of allergic reactions.

The increased elevation of temperature in case one with the formation of ulcers on the palpebral conjunctiva and the involvement of the kidney would lead one to suspect that this was the stage for the formation of the gray nodules which are found scattered in the body in animal experimentation.

Given the same source of infection it is interesting to guess why the glands are involved as in Case 1 and not in Case 2.

The similarity of these two cases with those reported by Dr. Bertha Klein-Mancriff and Bernice Rhodes in the Archives of Ophthalmology, August, 1933, is striking. I cannot help feeling also that the evanescent lesions of the skin and conjunctiva appearing several weeks after the onset of the fever are allergic in nature.

## SUBACUTE BACTERIAL ENDOCARDITIS IN PREGNANCY

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Due to the more recent work of Libman,<sup>2</sup> following Osler's earlier writings, subacute bacterial endocarditis has become recognized as a fairly frequent disease entity. The streptococcus viridans has been generally accepted as the etiologic factor, and the association of this with rheumatic fever has been the subject of a great deal of discussion. It is conceded by many that the preceding rheumatic damage could have been effected by the same organism causing the terminal disease; with a so-called "free interval" phase or a "bacteria-free stage," as described by Libman. During this quiescent period the patient is free from any signs or symptoms except for damage already done to the cardiac valves. Then an exacerbation occurs, the cardiac signs become more pronounced, and the second group of symptoms are produced, caused by the septicemia of the invading organism.

It is rather surprising that the incidence of this disease in pregnancy is so small. There are only seven cases of subacute bacterial endocarditis associated with pregnancy described in the literature: Terwilliger<sup>3</sup> reporting one case and reviewing two by Walser, one by Kobacher, and two by Mengert; and Bradford<sup>1</sup> adding another.

For this reason I am reporting the following case.

#### CASE HISTORY

Mrs. P. M., aged twenty-two, para 1, last menses on August 15.

General health was good although the patient was inclined to be nervous. Appendectomy was performed four years ago. Tonsils and adenoids were removed at the age of three.

The patient was first seen on October 20, at which time physical examination was negative except for a soft murmur over the pulmonic area to which no serious significance was attached. Blood pressure and urinary findings were negative. Patient was seen at bi-weekly intervals and followed an uneventful course until March 9, at which time she complained of a severe pain in the right sacro-iliac region. She stated that the previous day, having forgotten her door key and locked herself out, she entered her home by stepping through a window with considerable difficulty; and following this the pain in the right hip came on. An orthopedic surgeon was called into consultation and he diagnosed sacro-iliac strain and advised rest in bed and other

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measures which were followed. The patient was temperature-free and remained comfortable as long as she did not move, but complained of severe pain on movement. Subsequent roentgenologic examination of the hip joint showed no evidence of bone or joint pathology.

The patient remained in bed and was gradually improving from the joint pain when, on April 19, in her eighth month, she went into labor. She was transferred to Providence Hospital and delivered normally of a five-pound living female child, duration of labor being twenty hours. On the fourth day post-partum the temperature rose to 101.6 degrees and there was complaint of pain over the left kidney region. Physical examination at this time was negative, but the urine showed the presence of pus and a diagnosis of pyelitis was made, and treatment was instituted. The temperature continued to be intermittent and on the tenth day post-partum the patient, against advice, insisted on going home and was discharged by ambulance. Her condition remained unchanged until the fifteenth day post-partum, at which time a soft, systolic blowing murmur was heard over the entire precordial area. The case was then referred to Dr. George McKean, who subsequently diagnosed subacute bacterial endocarditis. I saw the case only once thereafter but Dr. McKean informed me that she developed all the classic signs and symptoms of a subacute bacterial endocarditis. Inasmuch as hospitalization was refused, laboratory work was not done except that a blood culture showed a typical growth of streptococcus viridans. The patient gradually grew worse and died six weeks post-partum.

The baby was removed from the breast on the fourth day post-partum and placed on a formula. It continued to gain and was in good condition at the time of the mother's death.

Subsequent interrogation of the parents of the patient as to her early history elicited the information that as a child she had been very "nervous and fretful," and that she had suffered from an attack of "rheumatism" during childhood. A young-

er brother had also suffered from rheumatism and had been treated for a subsequent pericarditis.

#### SUMMARY

It seems in this case, as in those previously reported, that the onset of the terminal illness was not related directly to the pregnancy. Although not definite, there appears to be a history of previous rheumatic disease and possible cardiac involvement therewith. In retrospect the episode of the right hip joint pain may have been a concealed rheumatic condition, or an embolus, although the absence of temperature is hard to explain. Clinically, the pregnancy did not appear to aggravate the condition and the consensus of opinion on those cases reported is to permit pregnancy to progress to term even where the diagnosis has been made early. In this case the flare-up occurred, not during the pregnancy, but in the puerperium.

The babies apparently escape the infection, for in all reported cases the follow-up showed them doing well. It is interesting to speculate as to their susceptibility to cardiac infection later in life.

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### SYMPTOMATIC RUPTURE OF A GRAAFIAN FOLLICLE\*

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In an acute abdominal case there is a formidable list of serious conditions to be considered in deciding whether the patient is one for emergency surgery or not. This paper deals with one of the less frequent causes of an acute abdominal syndrome which an examination of the literature shows to have been nearly one hundred per cent misdiagnosed; *i.e.*, the symptomatic rupture of a Graafian follicle. It is a condition, however, which should be constantly kept in mind in connection with a sudden pain in the lower abdomen. The important thing in cases of rupture of the Graafian follicle with hemorrhage is to be able to tell whether there is sufficient intraperitoneal hemorrhage to demand immediate laparotomy. In the writ-

er's experience most of the cases of this condition presented the picture of a mild acute appendicitis with insufficient localizing symptoms or shock to justify immediate laparotomy.

In such cases a knowledge of the physiological processes occurring in the ovaries, so far as that subject is understood, will facilitate an accurate diagnosis and evaluation of the symptoms. Ovulation, accord-

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ing to the older views, was supposed to occur coincidentally with menstruation. More recent views on the subject contend that ovulation may occur at any time in the menstrual cycle. It has also been strongly argued that it more frequently occurs ten to fourteen days prior to the first appearance of the menstrual flow. Ovulation may take place without the occurrence of menstrual flow. It has been shown that at birth the ovaries contain from twenty to thirty thousand primordial follicles. These develop as the individuals develop but only those that develop after puberty result in mature ova. The follicles that develop previous to the menstrual life merely result in atretic follicles and do not extrude an ovum. The mature Graafian follicle is seen as a small bleb on the surface of the ovary with a fine tracery of blood vessels coming from the periphery and fading out at the point of greatest convexity of the bleb. This point is called the stigma. Ovulation occurs when this follicle ruptures at the stigma, releasing the ovum, and the fluid within the follicle, into the peritoneal cavity. At the sudden release of the intrafollicular pressure there is an extravasation of blood into the concavity left by the ruptured follicle. Normally a clot forms as soon as this cavity is filled. The granulosa cells that line the follicle now hypertrophy and the lutein cells are in the process of formation. These cells form a supporting structure for the granulation tissue which proliferates from the ovarian stroma and eventually replaces the lutein cells. As the lutein cells atrophy and the fibrous changes occur, the structure takes on the characteristics by which we recognize the corpus albicans. This, in turn, undergoes hyaline degenerative changes and eventually may be all, or in part, absorbed. Under normal conditions at the time ovulation takes place, the patient has no symptoms from the process described above. It is easy to see, however, that the filling of the cavity of the follicle with blood might not stop there and that some blood might escape into the peritoneal cavity. As Wilfred Shaw<sup>8</sup> suggests, the rupture may go through one of the vessels in the wall of the follicle and, extending through the wall of the follicle to the ovary, result in sufficient hemorrhage to arise above the clinical horizon. A typical case of hemorrhage from a ruptured Graafian follicle should, therefore, occur

during the time that ovulation is most likely.

#### THEORIES OFFERED AS PREDISPOSING FACTORS

An explanation for the reason behind symptomatic hemorrhage from a ruptured Graafian follicle is, of necessity, theorizing. Suffice it to say that the only author to report positive pathology in a specimen removed at operation is E. A. Schumann.<sup>7</sup> He found distorted infiltrated vessel walls and suggested that sexual excitement, causing congestion of the pelvic organs, had increased intra-abdominal pressure, and caused the weakened vessel walls to rupture. This process, occurring at a time when a spontaneous rupture of a Graafian follicle took place, did not stop within the physiological limits. Should the rupture occur in a slightly immature follicle even without any demonstrable pathology it might be thought that the process which controls the subsequent hemorrhage is as undeveloped as the follicle. Thus the earlier the rupture occurs the more severe the hemorrhage might be. There is, as yet, insufficient evidence to prove or disprove this conjecture. Schumann's<sup>7</sup> theory of increased pressure and hyperemia might be the sole explanation for the hemorrhage, but if this were true it would certainly occur more frequently. Coitus, on the other hand, seems to play an important part from the frequency with which it is associated in the reported cases with the onset of the pain. Assuming that the time of ovulation is ten to fourteen days before menstruation, other case reports besides those submitted would seem to disprove the theory that only the immature follicles result in symptomatic hemorrhage, since far more of these cases occurred a week before menstruation than occurred earlier or later.

#### IMPORTANCE OF A DETAILED HISTORY FOR CORRECT DIAGNOSIS

The history of the onset of the symptoms as well as their characteristics, with particular reference to the menstrual history, is very important in making this diagnosis. It should be the ideal to make a correct diagnosis in every case as to the etiology of the symptoms, whether the patient is to be operated or not. With a sufficient hemorrhage from the rupture to present a marked shock picture it is often impossible to make an accurate diagnosis until the patient has been

operated. This is especially true in this condition since, if there is marked hemorrhage, the picture is almost typical of ruptured ectopic or severe acute appendicitis. Zachary Cope,<sup>9</sup> in his monograph on the acute abdomen, advises a carefully detailed history. He points out the pitfall of disregarding pertinent history because the patient adds irrelevant explanations of his own symptomatology. He further states the importance of getting a detailed menstrual history in any young woman with abdominal pain, not only that of her immediately preceding period but also the dates and characteristics of her last few periods. With particular reference to ruling out a ruptured ectopic, intermenstrual bleeding or spotting should be determined. It has been our experience that rupture of a Graafian follicle may occur at any time in the menstrual cycle. In the patients presented here, all except one were married and had had one or more pregnancies with no febrile postpartum course. None of the cases presented any past history suggestive of previous pelvic inflammatory disease. Two of the cases occurred shortly after or during coitus. One of the patients was operated with a preoperative diagnosis of appendicitis and the tear and hemorrhage from the ovary were discovered at operation. In all the cases presented, within normal limits, normal menstrual histories preceded the attack.

#### OUTLINE OF SYMPTOMS

1. Acute pain is a first and constant finding.
  - (a) It is in either right or left lower quadrant at first definitely localized.
  - (b) It comes suddenly, sharp, and stabbing.
2. Generalized abdominal pain and tenderness follow later.
  - (a) Additional minor sharp pains on side of rupture may occur with generalized pain.
3. Coincident and additional symptoms.
  - (a) Feeling of faintness may occur with pain.
  - (b) Nausea and occasionally vomiting are present.
  - (c) There is a desire to defecate if rupture is on left side.
  - (d) Chilliness without a chill may accompany symptoms.
  - (e) Patient shows picture of shock if hemorrhage is continuous and severe.
  - (f) Unilateral or bilateral shoulder pains may be present if hemorrhage travels up the lateral gutters.
4. Symptoms as a result of intra-abdominal hemorrhage.
  - (a) There is an elevation of pulse in ratio to hemorrhage.
  - (b) Temperature is normal for several hours, then there is a slight rise.
  - (c) Respirations are normal unless hemorrhage is severe.

- (d) Marked tenderness without localized rigidity is found in the abdomen.
- (e) In most cases a rebound tenderness is present which indicates a peritoneal irritation.
- (f) Hyperesthesia of lower abdomen is absent.
- (g) Dullness above symphysis is present only with massive hemorrhage.
- (h) Early blood examination is negative.
- (i) Pelvic examination reveals:
  - 1—Normal uterus and cervix.
  - 2—Painful palpation on side of rupture.
  - 3—Soft, boggy mass in cul-de-sac usually twenty-four hours after onset of pain.

Pain in either the right or left lower quadrant, coming on suddenly, is a constant finding. This is the first symptom, and is sharp and stabbing in character, being definitely localized at first. Later there is generalized abdominal pain and tenderness. Coincident with the pain the patient may or may not describe a feeling of faintness or a "sinking feeling." After the pain becomes generalized the patient may experience additional minor sharp pains, usually on the side of the rupture. These symptoms are followed by nausea and occasionally vomiting. In some cases where the rupture has occurred on the left there may be a desire to defecate. Chilliness but no actual chill may accompany the other symptoms. Where there is continued severe hemorrhage the patient will show the picture of shock and, as the hemorrhage travels up the lateral gutters, the patient may complain of unilateral or bilateral shoulder pain.

Such cases of severe hemorrhage are difficult to differentiate from ruptured ectopic pregnancies and although a diagnosis should be attempted it is most important to recognize the acute surgical abdomen. On examination the pulse may or may not be elevated in rate depending, of course, on the extent of the hemorrhage. The temperature for several hours after the onset remains normal and then rises slightly. In the cases presented where the diagnosis was confirmed there was an average temperature below one hundred degrees. Respirations are usually not increased unless the hemorrhage is of a severe grade and the patient first seen several hours after the rupture. Abdominal examinations show moderate to marked tenderness although no localized rigidity is present.

In most cases there is present some rebound tenderness which is only of value as an indication of peritoneal irritation. Hy-

peresthesia of the lower abdomen on the side of the pathology is absent, since this sign is only a reflex segmental irritability from inflammation of the appendix and cecum, and the same spinal segment gives rise to the ilioinguinal and iliohypogastric nerves. Only in cases of massive hemorrhage can dullness above the symphysis or in either flank be detected. Blood examination, if made early, will show no gross changes. Pelvic examination will reveal a normal uterus and cervix with no escape of blood from the cervix. The uterus may or may not be tender to movement but palpation on the side of the rupture usually is painful. Of course the presence of an indurated parametrium or a tubal mass, regular or irregular in outline, would lead to a different diagnosis. There frequently is a soft, boggy mass in the cul-de-sac which, however, may not be detectable until twenty-four hours after the onset of the pain.

#### SURGICAL OR CONSERVATIVE TREATMENT

As in all intra-abdominal conditions one should be on the watch for the acute surgical abdomen. Severe acute pyelitis should be kept in mind and a urine specimen examined. The localization of the symptoms to the lower abdomen should not lead to carelessness in considering the upper abdominal conditions. A twisted pedicle on a pelvic tumor should be easily differentiated if a careful examination is made. In the more serious hemorrhages a ruptured ectopic would be a difficult differential to make and is, after all, unessential as long as the need for immediate laparotomy is recognized. My plea is for conservative treatment of the milder degrees of hemorrhage in an acute abdomen. There are other causes of hemorrhage from the ovary which could give an identical picture and could not be differentiated from a ruptured follicle but should be treated conservatively also. (1) Hematomas of the corpus luteum with leakage into the peritoneal cavity. (2) Endometrial cysts with leakage. (3) Hemorrhage into a Graafian follicle cyst without rupture. (4) Hemorrhage into any abdominal or pelvic tumor where the tumor cannot be felt by abdominal or pelvic examination.

#### CONFIRMED CASE REPORTS

*Case 1.*—Mrs. P. W., aged thirty-four. The patient was taken with a sudden pain in the right lower abdomen about six o'clock in the morning. This was followed by nausea and she vomited once. The pain soon became generalized over the abdomen.

The nausea increased but the patient did not vomit further. She had been constipated for some time and had been seen before with abdominal discomfort for which an x-ray had been ordered and a diagnosis of chronic appendicitis had been made. The patient's last three menstrual periods had been perfectly normal and her next one was due in six days. There had been no spotting. She felt chilly but had had no definite chills. Physical examination showed marked tenderness over the lower abdomen with especial localization on the right. There was slight rigidity. Pelvic examination was entirely negative. There was some rebound tenderness but there was no hyperesthesia of the right lower abdomen. Her temperature was 99.6 and her white blood count was 7,200. Her past history was essentially negative. No previous operations. One pregnancy three and one-half years ago with a normal postpartum course. No history suggestive of pelvic inflammatory disease.

A diagnosis of an acute exacerbation of a chronic appendicitis was made and immediate laparotomy done. At operation the appendix was found to have a small adhesive band at the tip but was not acutely inflamed. An appendectomy was performed. There was some free blood in the pelvis and examination of the right ovary showed a small tear at the site of recently ruptured Graafian follicle. This was closed with a plain catgut suture and the abdomen closed without drainage. Her post-operative course was uneventful.

*Case 2.*—Mrs. H. H., aged twenty-four. The patient was perfectly well on going to bed and experienced some pain during coitus. Shortly after this there was a sudden, sharp pain in the right quadrant not associated with nausea and vomiting until a few hours later. The pain continued with little stabbing increases. She had never had a previous similar attack. Her menstrual history was negative and there was no associated dysuria or constipation. This attack occurred thirteen days prior to her next period. Past history and family history were negative. She had been married two years without pregnancy or any history suggesting pelvic inflammatory disease.

Abdominal examination showed some tenderness in the right lower quadrant without any rigidity or tumor masses palpable. Pelvic examination was negative except for tenderness in the right ovarian region. The next day, on pelvic examination, a soft, boggy mass could be felt in the cul-de-sac. A diagnosis of ruptured Graafian follicle was made and needling the cul-de-sac revealed the presence of some bloody serum. The patient made a rapid recovery and was given relief by bed rest and hot vaginal douches. The mass in the cul-de-sac disappeared. Her temperature at no time was above 99.4.

The other cases are given here presenting similar histories and physical findings in whom the diagnosis of ruptured Graafian follicle was made but where the diagnosis was not confirmed and treatment was conservative.

*Case 3.*—Mrs. A. J., aged twenty-six. The patient was seized with a sudden, sharp pain in the lower abdomen following intercourse. Some nausea but no vomiting. No urinary symptoms, diarrhea, or constipation. Menstrual history perfectly regular. The patient had had a normal, spontaneous delivery several months before, with no postpartum fever. There was no previous inflammatory history or previous operation. For several hours after the onset, additional sharp pains recurred. The next day there was a mass in the cul-de-sac which disappeared, as did the tenderness and pain, in a few days. Pelvic examination at the time of attack showed only ovarian tenderness.

*Case 4.*—Mrs. J. M., aged twenty-six. Sudden,

sharp pain in the lower abdomen which could not be localized but which radiated to the vaginal vault. Not related to coitus. The pain soon became generalized. There was no vomiting, though some nausea. The patient got out of bed shortly after the onset and there was some dizziness present which recurred the next day. There were no urinary symptoms, diarrhea, or constipation. Appendectomy had been done ten years before. Examination was negative except for tenderness and some spasm on the right. The condition cleared up spontaneously in four days. The attack occurred four days prior to the next menstrual period which was two days late. The menstrual history had been perfectly regular.

*Case 5.*—Mrs. J. H. F.—Typical history as given above. No relation to coitus. The mass in the cul-de-sac appeared on the second day and the patient made an afebrile spontaneous recovery with conservative treatment.

#### CONCLUSIONS

1. Mild hemorrhage from a ruptured Graafian follicle cyst may or may not give

the picture of an acute intra-abdominal condition.

2. Careful recognition of the mild hemorrhage is essential for proper treatment.

3. Mild hemorrhage which gives the picture of an acute abdomen may be treated conservatively if it is properly diagnosed.

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216 S. STATE STREET

## A SURVEY OF SENSITIZATION IN STUDENTS OF THE UNIVERSITY OF MICHIGAN\*

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**Human hypersensitivity**—A person is said to be hypersensitive when he reacts with characteristic symptoms to certain substances in amounts harmless to normal individuals. How many people are in the United States suffering with this malady in any of its different forms? This is a question somewhat difficult to be accurately answered. Persons do not die of eczema or hives or hay fever and very few do of asthma, therefore vital statistics are of little value to the investigators. Hospitalization of these cases is rare, consequently one cannot turn to the hospital records for information. However, some authorities in allergic diseases have made special studies in their endeavor to answer that question. Dr. Arthur F. Coca<sup>1</sup> estimates the incidence of hay fever in this country as less than one per cent of the exposed population. Dr. W. Scheppegrrell<sup>3</sup> concludes that 1.5 per cent of the population of the United States between the ages of ten and sixty are sufferers from hay fever, or about 1 per cent of the total population, approximately 1,100,000 people. Drs. Robert A. Cooke and W. C. Spain<sup>4</sup> think that 3.5 per cent of the population of New York and vicinity exhibit hay fever or bronchial asthma. Drs. Robert A. Cooke and A. VanderVeer, Jr.,<sup>2</sup> report about 7 per cent of the population as suffering with human hypersensitivity, including even the weakest degree.

In the University of Michigan, at the

Health Service Unit, sensitization test is given to any student who shows indication for it. In 1930 we began to study the new students entering this institution in order to make a survey of the prevalence of this group of symptoms known as human hypersensitivity.

On the Entrance Health Examination blank, under the heading "Family Health," certain diseases which have appeared among relatives are to be checked, *i.e.*, "sick headaches," "asthma," "food poisoning," "digestive upsets." Under the student's personal "Past Health" the following illnesses among others are to be checked, if the student has had them: "asthma," "hay fever," "eczema," "hives," "digestive upsets," and "food poisoning," giving approximately the age at which any of the complaints has appeared. Under his personal "Present Health," the student is asked to check sick-

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TABLE I. DISTRIBUTION OF SENSITIZATION GROUPS (NEW STUDENTS)

Groups	1930*						1931†						1932						Totals		
	Male	Female	Total	%	Male	Female	Total	%	Male	Female	Total	%	Male	Female	Total	%	Male	Female	Total	%	
I. Eczema; Rose fever; Hay fever; Asthma	181	*	10.	222			11.8	236			14.	639			11.9						
II. (a) Urticaria; (b) G. I. upsets; Food idiosyncrasy; Frequent "colds"; Headache, etc., with <i>good</i> family history of sensitization	429	*	181	10.	88		10.7	100			13.2	188			11.9						
III. G. I. upsets; Food idiosyncrasy; Frequent "colds"; Headache, etc., with <i>no</i> family history of sensitization	241	*	13.3	252			20.6	378			33.6	13.7			827						
IV. No symptoms, so far with <i>good</i> family history of sensitization	325	*	17.9	361			19.3	289			59	7.7			135						
V. No symptoms and no family history of sensitization	632	*	34.9	648			34.6	577			21.1	183			261	10.7					
Totals	1,808		632	34.9	648		34.6	577			35.1	258			287						
Groups I and II																					
Groups I, II and IV																					

\*The figures for the women in 1930 are not included. Many of the women's Entrance Health Examination blanks had no sensitization questionnaire.  
†Sixty-four students not classified were not included (10 men, 54 women).

ness which he has now or which he has from time to time. There he finds among other complaints "headaches," "frequent head colds (more than three a year)," and "abdominal cramps (gas on stomach)." These blanks are checked by the parents as correct in about 80 per cent. By going over these entrance blanks we are able to classify each new student into one of the following groups:

Group I. Those who have checked eczema, rose fever, hay fever, or asthma.

Group II. Those who have checked (a) urticaria, (b) gastro-intestinal upsets; food idiosyncrasy, frequent "colds," headache, etc., with good, *positive family history of sensitization*.

Group III. Those who have checked gastro-intestinal upsets, food idiosyncrasy, frequent "colds," headaches, etc., with *no family history of sensitization*.

Group IV. Those who have had, so far, no symptoms of illness leading one to suspect them as sensitized people, but have checked a *positive family history of sensitization*.

Group V. The balance, that is, those who have checked no symptoms and no family history of sensitization.

In Table I is shown a record of students entering in the falls of 1930 (women excluded), 1931, and 1932, classified in these five groups.

When one studies this table one is surprised to find that year after year the percentages in each group are almost the same. The greatest variation in sex is 4.3 per cent, occurring only once, in Group III for 1932. The most extraordinary identity is found on the total sex averages for three groups. Group I, II and V give, respectively, equal average for men and women (11.9 per cent in Group I, 22.2 per cent in Group II, and 34.6 per cent in Group V).

Another observation is made in Groups III and IV, where one sees the largest variation. In Group III one finds an average of 4.40 per cent higher in men than in women, while logically in Group IV one sees the reverse, that there is also a difference of 4.42 per cent but the higher percentage is in the women.

Attention should be called to the total percentages of the different groups, especially to those concerned with sensitization,

(Group I, II, IV). Group I, which includes maladies accepted as sensitization, gives 11.9 per cent, *i.e.*, we have found that at least 12 per cent of the incoming students of the University of Michigan have had eczema, rose fever, hay fever or asthma. There is no doubt that these 12 per cent should be studied from a sensitization point of view. Group II gives 22 per cent of these students who also need to have the sensitization test. When Groups I and II are united, one sees that 35 per cent of the student body need the test. If to these two groups (I and II) one adds Group IV, the potential cases, one finds that 54 per cent of college students (over half) need the complete study of sensitization.

#### CONCLUSIONS

1. The importance of the phenomenon of human hypersensitiveness in problems of health and disease needs more general recognition. Because of the progressive nature of symptoms which become more difficult with age, it needs attention in college students.
2. On the basis of the history of nearly 7,000 entering students we conclude that about 35 per cent belong to the class of sensitized persons.
3. On the same basis we find 20 per cent of potential cases, which later in life may or may not develop symptoms of sensitization.
4. More than half (54 per cent) of men and women college students should receive a complete sensitization study.
5. Success in handling this group of patients depends upon:
  - (a) The attitude of the physician toward the patient.
  - (b) The completeness of tests and the removal of offending agents.
6. Every case must be studied as an individual in conjunction with other specialties in medicine.

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# THE JOURNAL

## OF THE

### *Michigan State Medical Society*

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## EDITORIAL

### MEETING THE SITUATION

The action of the House of Delegates of the Michigan State Medical Society at the special meeting at Flint has been the subject of state-wide and nation-wide comment. What actually took place was the adoption of the following: (1) Approval of general principle of the plan of Mutual Health Service. (2) Approval for discussion of the plan with employers and employees. (3) Approval of an action to determine the legal status of the Mutual Health Service and the necessary action for the organization of Mutual Health Service. (4) Approval of the preparation of a final detailed plan of the Mutual Health Service for presentation to the House of Delegates for final action.

The last number of this JOURNAL contained a supplement of twenty-seven pages of reports and discussion, but these recommendations constitute the final action of the House of Delegates. It will be seen that no final commitment to any definite policy was attempted. The whole matter is left with individual county societies with the approval of the deliberative body of the society, the House of Delegates.

The medical profession have done their best to render service where and when needed, frequently at great personal sacrifice. They have assumed what should have been a community burden so that the community has come to look upon the care of

the indigent sick as the proper function of the medical profession. However, no profession can continue indefinitely to shoulder what should be a community function, any more than produce merchants can continue to minister to the physiological demands of the unemployed. Something must be done. What that something is, the profession is doing its best to determine through the efforts of the Special Committee on Economics who have seriously studied the economic and social phases of medicine with the view to determining the wisest course for the future. The committee welcomes suggestions and criticisms. They have no other interest than the good of the society as a whole.

Theirs is a long range view. The social agitator has been at work and is still active with his propaganda. He has his influence. He cannot be ignored. Silence on the part of the profession amounts to acquiescence.

As already stated, the medical profession have endeavored to meet the situation at their own expense. In one county (Wayne) a plan which appears to have many things in its favor is in its incipiency. The idea is group medicine by which the members of the county society constitute the group. The object is service to the wage earner when he needs it, regardless of his ability to pay at the time. If that service is in the nature of a major operation, through agreement with the hospital, the attending physician and surgeon, the cost is spreaded over an entire year, payment to be made by the employer (by agreement with the employee) to the central bureau, the county society, to be pro rated each pay day to the various persons concerned. The plan applies to medical service as well rendered to workers or their families in their own homes, including the laboratory and other specialist service.

There is nothing in this plan that is antagonistic to the endorsement of the report of the Committee on Economics. The two are complementary and there is still room for any other effective movement on the part of county societies for the solution of their problems.

There never was greater need than now for deliberation as well as harmony among members of the medical profession. There should be a concerted effort to procure all the facts and to form opinion only on evidence.

## X-RAY EXAMINATION OF THE GASTRO-INTESTINAL TRACT

Elsewhere in this number of the JOURNAL OF THE MICHIGAN STATE MEDICAL SOCIETY appears a paper on Roentgenologic Aspects of Gastroenterology which has been read before three county medical societies of the Upper Peninsula, a sort of peripatetic post-graduate course. We are pleased to put this in permanent form for not only the members of the Upper Peninsula County Societies but also for the entire membership of the Michigan State Medical Society.

The x-rays were discovered by Roentgen, a physicist, in 1895. It is significant that the first use sought for them was as a diagnostic agent in medicine. Only recently have the x-rays found their place as diagnostic factors in industry, where they are used to check up for flaws in castings. In May, 1896, experiments were made on the hollow abdominal viscera of the guinea pig by using one of the heavy salts of lead—poisonous of course. Bismuth subnitrate in suspension was used by Cannon of Boston beginning in 1897 for animal experimentation on cats. Following this, bismuth subnitrate was used on the human but was found unsatisfactory in the quantity necessary to do satisfactory diagnostic work. In 1910 barium sulphate, the insoluble salt of barium, was discovered to possess all the properties necessary for an opaque medium. It was not only non-toxic but neutral so far as astringent or laxative properties were concerned. From this date developed the ideal facilities for examination of the alimentary tract by means of the x-rays. The invention of the hot cathode tube by W. D. Coolidge was also an important factor in perfecting a technic of gastrointestinal examinations.

With improvement in apparatus and opaque media, roentgenology affords facilities for very fine diagnostic work by those trained as roentgenologists. It should be remembered, however, that x-ray equipment bears the same relation to the operator as the scalpel to the surgeon. Once either is acquired, a great deal of training and specialized knowledge are necessary to make either a surgeon or a roentgenologist. The paper presented at length will give the general medical reader some idea of the *modus operandi* of examination of the alimentary tract. However, after old Izaak Walton,

when he had given a detailed explanation of the gentle art of the angler, the writer of this lengthy paper might well say, "I have given you my fiddle, but I haven't yet given you my fiddlestick."

### DR. WILLIAM H. WELCH

The death of Dr. William H. Welch, which took place early in May at the advanced age of eighty-four, removed one of the great benefactors of the race. Dr. Welch's career and influence as professor of pathology of Johns Hopkins University have been universally recognized, though the scope will never be accurately known. He occupied a prominent place among such immortals as Koch, Pasteur, Lister, Ross, and others prominent in medical history.

Yet the acclaim is not so great as that following the passing of a great general and it is doubtful if the greatest names in science and medicine will receive more than mention when the political and social history of the present and immediate past comes to be written.

There is little question that disease has had as great a devastating effect upon mankind as war. Yet billions of dollars are appropriated for defense against alleged foreign enemies; and those who lead armies to victory, and in some instances to defeat, are heralded as the nation's heroes. We are not contributing to the subject of pacifism. However, to quote a hackneyed expression, "Peace has its victories no less renowned than war." The eminent medical scientist is a great humanitarian. His efforts for the race are constructive and his researches are towards the destruction of man's common enemies.

The man of science receives recognition from institutions of learning in the shape of honorary degrees. The man on the street, however, accepts the blessings of health as though they were not bought with a price. He is little concerned with the martyrs of science. The reward of the humanitarian consists rather in a consciousness of having accomplished a constructive task in the way of making the world a better place in which to live. Of the two, the general and the man of science, the latter at the final reckoning will be *sub specie aeternitatis* the greater.

## TELEPHONE RATES

During the past month the matter of telephone rates has been thrashed out between the Public Utilities Commission and the Michigan Bell Telephone Company with a result that does not bring much satisfaction to the public and particularly to the medical profession. Next to the doctor's automobile the telephone has come to be a professional necessity. After much agitation automobile licenses have been lowered, but the charge for telephone service remains practically the same. The rental for the so-called cradle 'phone has been eliminated after eighteen months' rental has been paid. In other words the lessee actually pays for an instrument which in the end belongs to the company.

According to a recent news item, the number of telephone subscribers in the Detroit district has decreased by 100,000. If this be true, the telephone is of much less value to those subscribers who have maintained their 'phones throughout the depression. A wiser policy, it seems, would have been to lower the rates in keeping with what erstwhile subscribers could afford to pay, a policy which would have avoided the impairment of the service.

We are led to wonder what water rates would be today if this public service were under the control of a private corporation with virtual monopoly rights.

## SLEEP

Sleep and rest are among the most important factors in the restoration to health of persons afflicted with curable disease. Among the more important drugs are hypnotics, and pharmaceutical concerns vie with one another in the production of these agents, each claiming for its product the property of producing sleep with the fewest untoward after-effects. Man in both health and disease is wont to seek escape from reality. Sometimes he seeks it by way of narcotics, or by alcoholic stimulation. The escape, so-called, is best, however, when it follows normal fatigue, as sleep without the further aid of hypnotic drugs; all of which is prefatory to the subject as described in our best poetry and prose.

Edward Young, an eighteenth century poet, in his *Night Thoughts* describes

Tired nature's sweet restorer, balmy Sleep!  
He like the world, his ready visit pays  
Where Fortune smiles; the wretched he forsakes,  
Swift on his down pinion flies from woe,  
And lights on lids unsullied with a tear.

Praed (early nineteenth century) sees it in a humorous light as during the prolonged debate on the Reform Bill in the British House of Commons, the speaker of the house, who fills the rôle of chairman, is discovered sound asleep:

Sleep, Mr. Speaker; sweet to men  
Is the sleep that cometh but now and then;  
Sweet to the sorrowful, sweet to the ill,  
Sweet to the children that work in a mill;  
You have more need of sleep than they—  
Sleep, Mr. Speaker; sleep, sleep while you may!

Coleridge in the *Rime of the Ancient Mariner* welcomes it as surcease from anxiety on the broad expanse of ocean:

Oh sleep! it is a gentle thing,  
Beloved from pole to pole!  
To Mary, Queen, the praise be given!  
She sent the gentle sleep from Heaven,  
That slid into my soul.

John Keats describes it as a

Soft embalmer of the still midnight,  
Shutting, with careful fingers and benign,  
Our gloom-pleas'd eyes, embower'd from the light,  
Enshaded in forgetfulness divine:  
O soothest Sleep! if so it please thee, close  
In midst of this thine hymn my willing eyes,  
Or wait the amen, ere the poppy throws  
Around my bed its lulling charities.

Of course, any account of sleep should include a Shakespearean description. Shakespeare refers to the horror of a guilty conscience which renders sleep impossible.

Methought I heard a voice cry, "sleep no more! Macbeth does murder sleep!" The innocent sleep, Sleep that knits up the ravell'd sleave of care, The death of each day's life, sore labor's bath, Balm of hurt minds, great nature's second course, Chief nourisher in life's feast.

And again we have the wonderful apostrophe to sleep in *Henry the Fourth*:

O sleep! O gentle sleep!  
Nature's soft nurse, how have I frightened thee,  
That thou no more wilt weigh my eyelids down  
And steep my senses in forgetfulness?  
Why rather, sleep, liest thou in smoky cribs,  
Upon uneasy pallets stretching thee,  
And hush'd with buzzing night-flies to thy slumber,  
Than in the perfum'd chambers of the great,  
Under the canopies of costly state,  
And lull'd with sound of sweetest melody?  
O thou dull god! why liest thou with the vile  
In loathsome beds, and leav'st the kingly couch  
A watch-case or a common 'larum bell?  
Wilt thou upon the high and giddy mast  
Seal up the ship-boy's eyes, and rock his brains

In cradle of the rude imperious surge,  
And in the visitation of the winds,  
Who take the ruffian billows by the top,  
Curling their monstrous heads, and hanging them  
With deaf'ning clamour in the slippery clouds,  
That with the nurly death itself awakes?  
Canst thou, O partial sleep! give thy repose  
To the wet sea-boy in an hour so rude,  
And in the calmest and most stillest night,  
With all appliances and means to boot,  
Deny it to a king?

Perhaps the finest reference ever made to sleep is that by the Spanish novelist, Cervantes, quoted recently in this JOURNAL and repeated here as a climax:

"Now blessings light on him that first invented this same sleep! It covers a man all over, thoughts and all, like a cloak; it is meat for the hungry, drink for the thirsty, heat for the cold, and cold for the hot. It is the current coin that purchases all the pleasures of the world cheap, and the balance that sets the king and the shepherd, the fool and the wise man, even. There is only one thing, which somebody once put into my head, that I dislike in sleep; it is, that it resembles death; there is very little difference between a man in his first sleep, and a man in his last sleep."

#### THE WRITING OF CONTRIBUTED PAPERS

Writing is an art and as perfection is the goal which is seldom attained there is plenty of room for lifelong effort. The object of writing is to convey one's thoughts clearly and forcibly to the reader. It is reasonable to assume that clear thinking should precede any attempt to write. Unless a person can marshal his ideas clearly, it is too much to expect him to express himself well on the written or printed page. We wish to say that many doctors write exceedingly well; and in the same breath, we might also say that there are others who might write a great deal better than they do, if they devoted more attention to the study of good models of English.

There are a number of small handbooks\* on scientific writing which every aspirant to authorship would do well to study. Among the commoner faults which should be avoided is an abbreviated style. Some doctors, particularly in writing up case histories, present papers for publication which are

\*The Writing of Medical Papers by Mellish published by W. B. Saunders Company, Philadelphia, and a small book on the same subject bearing the imprint of the American Medical Association are serviceable and should be consulted by every medical author: Notes on the Composition of Scientific Papers by the late Sir Clifford Allbutt is of particular interest since it goes more into detail in the subject of Composition of Scientific Papers. Macmillan and Company are the publishers. On the Art of Writing by Sir Arthur Quiller-Couch (Putnam) is a very interesting contribution for those who wish to study the Art in greater detail.

scarcely more than notes intelligible only to the writer himself. There is a disposition to leave out such words as *a* and *the*. Sometimes the subject is omitted from a sentence and some times the predicate is absent. Another fault is that of typewriting papers single space, which will not permit of editing or supplying the missing words by the editor, whose function it is to make these contributions read intelligibly. Here is a sentence culled at random: "Physic and enema by mother produced bowel movement but was still nauseated." We are tempted to quote at length but to avoid plagiarism we believe in always giving credit to the author of our quotations. To do this, however, might cause embarrassment, so we shall refrain. If papers were always written double space the editor would be in a position to supply the missing parts of a sentence. Attention is drawn to page iv, advertising section, in which is presented advice to prospective contributors to this JOURNAL. Mistakes may be avoided by consulting one or two of the little manuals on the writing of scientific papers. While, owing to the exigencies of space, short papers are preferable to long ones, no attempt should be made to shorten the paper by leaving out words or using abbreviations which are not generally understood. In fact abbreviations have very little place in literature of any description.

#### THE DEVELOPMENT OF THE ELECTROCARDIOGRAPH\*

Animal electricity was unknown before the time of Galvani, and it has been only since that time that the knowledge which provides the physiological basis for electrocardiography has accumulated. Nevertheless, events in biology and physics converged during the preceding two centuries upon Galvani and led him to formulate the idea of electricity as a characteristic of living tissue. Since Queen Elizabeth's physician, Gilbert of Colchester, first announced his views on the subtle effluvium or "electric" which he obtained by rubbing amber, resin, glass and gem stones, a whole body of information on electricity had grown up. Von Guericke (1672) had devised the first elec-

\*This historical editorial is one of the series appearing in this JOURNAL on the general subject of The Evolution of Methods and Devices that have aided in the Growth of Medicine and Surgery.

trostatic machine, which had been improved subsequently so that a nearly continuous supply of powerful electricity was available. The "Leyden jar," a condensor, in which electrical energy could be stored and from which discharges could be elicited, had been devised in 1745. Electric sparks, the electric shock, the transmission of electricity over a conductor and the nature of conductors and insulators were known through the work of Gray and Dufay. It was recognized that the human body transmitted electricity and that small animals could be killed by a sufficient electric shock. Benjamin Franklin had demonstrated the identity of the discharge of lightning with electricity (1752). Coulomb had discovered the laws of electrical attraction and repulsion. It was common knowledge that lightning rods protected houses and that current could be transmitted as far as four miles over an electric wire. Physicians, since 1739, had reported cures after treatment of patients by electrical discharges. The discharge of the torpedo ray which had puzzled men for centuries had been demonstrated by Walsh (1773) as an electrical phenomenon.

Certain features of biological science likewise influenced Galvani's investigations. Such anatomists as Fabricius (1618), Croone (1664), Steno (1667) and Borelli (1680) had studied some of the mechanical features of muscular movement, and Swammerdam, following 1658, had studied the actual contraction of the muscles of frogs by stimulating the nerve mechanically or with chemicals. Robert Whytt (1751) and Von Haller (1755) had considered the reflex control of movement and the intrinsic irritability of muscles respectively.

At this stage, Galvani began his work. He amplified the earlier experiments of Swammerdam by stimulating the nerves of frogs' legs with charges of static electricity from Leyden jars. After several years of study, he attempted to find the effect of atmospheric electricity upon the frog material and accidentally came upon a phenomenon for which he is chiefly known. Frogs' legs were suspended by copper hooks from an iron balustrade out of doors. It was noticed that spasms developed in the muscles when the wind blew the tissue against the iron of the balustrade. Further work demonstrated that a spasm resulted when the nerve and muscle were touched by any arc formed by two metals, such as copper and

iron. Galvani interpreted the phenomenon as due to electricity arising in the muscle and circulating from the muscle, through the metallic arc and back to the muscle again. The twitching was considered an evidence of animal electricity, a term which he coined (1791). Volta immediately opposed this view, maintaining that the electricity was generated at the contact between the two metals, and that the convulsion in the frog muscle was merely an indication of the current so generated. A second experiment by Galvani in which the nerve of a frog preparation was brought into contact with an injured muscle likewise elicited a response, and in this case, no metal was used.

A dozen investigators repeated the experiments, agreeing with the interpretation of either Galvani or Volta. Von Humboldt (1797) recognized the value of the views of both men. He believed that Volta's explanation of Galvani's experiment was correct, but he also believed that animal electricity was an inherent feature of the living tissue. He furthermore related the electrical phenomenon of the frog muscle to that of the electric eel. At this period, Volta (1799) conclusively proved that electricity could be generated from metals. He stacked alternate discs of copper, zinc and wet cloth in a vertical arrangement and found that a continuous current, the strength of which was proportional to the height of the pile, could be obtained. Attention was immediately directed away from the study of animal electricity, and this phenomenon was ignored until galvanometers were first devised. The voltaic pile which with some modifications led later to the modern storage battery initiated many researches of a purely electrical nature.

Oersted in 1819 studied the effect of current from a voltaic pile upon the magnetic needle of a compass. He noted that the needle was deflected from its north to south direction when a wire carrying the current was placed in proximity to the needle, and that the extent of deflection corresponded with the amount of the current. In the next year, Schweigger found that, if a current were made to pass through a coil of twenty to a hundred turns of wire surrounding a magnetic needle, the effect of the current on the needle was more noticeable. On this principle, he constructed the first galvanometer, which was called the "multiplier." Nobile, in 1825, devised a more sensitive instru-

ment called the "astatic multiplier." This consisted of a doublet of nearly equivalent magnetic needles mounted parallel, but in opposite directions. The effect of the earth's magnetism was largely counteracted and weak currents passing through a coil of several thousand turns of wire caused a noticeable deflection of the indicator point. With this galvanometer, Nobili, in 1827, was able to detect currents in frog preparations, but he considered the effect due to temperature differences in the muscle, rather than an evidence of animal electricity.

The existence of animal electricity was not definitely proven until 1838 when Carlo Matteucci restudied the electrical phenomena of nerve-muscle preparations. Matteucci measured the potential difference between a damaged muscle and its nerve by means of the galvanometer, identifying what he called muscle current or proper current. He indicated furthermore that the electricity generated within the muscle and nerve was capable of causing convulsions in another muscle-nerve preparation, the action of the latter, known as the galvanoscopic frog, revealing the electrical energy of the first preparation in a manner similar to that of the galvanometer deflection. He likewise investigated the electrical organs of the torpedo ray, studying the innervation, the cerebral control of discharge, and the character of the shock under various conditions of temperature and fatigue. The charge of the electric organ was demonstrated both by the convulsive kicking of frog preparations placed upon the back of a fish and by galvanometric measurements. A small part of the electric organ, the size of a pinhead, when isolated from the ray, was capable of initiating a response in the galvanoscopic frog. Matteucci believed that animal electricity, like animal heat, was a consequence of the chemistry of tissues.

After 1843, for a period of about thirty-five years, Emil DuBois Reymond of Berlin dominated the field of electrophysiology. He repeated and extended Matteucci's experiments upon the current of muscle and nerve and upon the currents of the electric catfish of the Nile. The superior measurements which DuBois Reymond made were, to a large extent, due to the use of better galvanometers than were available in Matteucci's time. The astatic galvanometer, although sufficiently sensitive, was difficult to use, since it required about thirty seconds

for the indicator to stop oscillating after a deflection. The Wiedemann-Bussole and the D'Arsonval galvanometers were less troublesome in this respect, so that they became indispensable to the electrophysiologist who wanted to follow electrical changes in tissues. In the first instrument, a small ring-shaped magnet was suspended between two coils of twenty thousand turns of wire each. As the tissue current passed through the coils, the magnet and its attached indicator twisted to one side or the other. In the second galvanometer, the relation of the magnet and coil was reversed. A fine coil bearing the current was suspended between fixed magnets; the torsion of the coil and the indicator mirror attached to it was proportional to the current passing through the coil. DuBois Reymond devised non-polarizing electrodes of zinc and zinc sulphate and further increased the accuracy of his galvanometers. The current found in muscle tissue, he considered, was due to the polarized condition of the muscle itself, the inside and outside being characterized by different electromotive particles. These charges, however, could not be detected unless the muscle tissue was punctured or cut, when a current flow between the injured and uninjured portion was possible. He further showed that the current which flowed between the injured and the uninjured portion of the muscle could be diminished by stimulating muscle contraction through the nerve (the current of negative variation).

In 1868, Hermann demonstrated that a perfectly normal uninjured muscle having no injury current could give rise to a momentary current during the period of muscle contraction. This current associated with muscular activity was called the action current. He contested the view of DuBois Reymond that a current must be assumed to be present in uninjured muscles, stating that a current in resting muscle arose through the injury process and was not an inherent characteristic of normal muscle. The views of Hermann were somewhat modified by subsequent observers as data accumulated. It was noted that a constant current resembling the current of injury of muscle could be detected between the outer and inner surfaces of the skin of a frog associated with the activity of cutaneous glands. Currents were demonstrated between the hilum and the exterior of salivary glands and between the optic nerve and cornea of the excised eye—

an injury current which could be increased or decreased by the action of darkness or light upon the retina. Currents were likewise indicated in plant tissues, which led to the disuse of the term animal electricity.

The modern viewpoint on tissue electricity arose through the work of Bernstein, Macdonald, and Brünnings during the first years of the present century and was subsequently modified by Beutner, Lillie, Bayliss and others. According to recent views, ions of the cell protoplasm are polarized along the cell membrane so that the cell contents are negative while the exterior is positive. When the electrodes of a galvanometer are placed in contact with the surface, there is no deflection because of the isoelectric character or equivalence in charge on the exterior of the membrane. After an injury, a current flows between the exterior and the interior of the cell, giving rise to an injury current which had been known by earlier investigators as the proper current (Matteucci) or current of rest (DuBois Reymond). When a contraction wave in muscle or wave of activity in a gland passes over the cell unit in the normal function of the cell, a change in the permeability of the cell membrane follows the wave of activity. At the location of the permeability change, an electrical current arises between the exterior and the interior of the cell, initiating an action current (Hermann). As the action current travels down a nerve of muscle fibre, it passes by one electrode and then the other of a galvanometer in such a way as to cause a deflection in one direction and then in the other. The alternation of the galvanometer reading represents a diphasic response. When the current of injury from a mutilated cell or group of cells is recorded, the passage of a wave of activity results in a decreased galvanometric reading, rather than diphasic current. This is the negative variation of DuBois Reymond and Helmholz. The electrical polarity associated with living tissue is a consequence of the metabolism and irritability of the cell, and all active cells show this characteristic. The forces of each tissue are similar to the electrical forces of the constituent cells, and the electrical changes in polarity associated with the excitation of a tissue are capable of detection. In a practical sense, the electrical changes of living tissues have been utilized in the investigation and clinical study of the heart.

In 1856, Kölliker and Müller demonstrated electrical current in the frog's heart. Burdon-Sanderson and Page during the 70's and 80's followed up the earlier work with more complete studies on both frog and turtle hearts. Waller extended action current investigation to the isolated mammalian heart and in 1889 he devised methods for determining the electrical changes of the intact heart of both mammals and man. Garten and Einthoven among others of the nineteenth century advanced the electrophysiology of the heart to an essentially modern state. All of the successors of Kölliker and Müller recorded the action currents photographically by means of the Lippmann capillary electrometer. This instrument consisted essentially of a capillary tube containing mercury, in contact with a dilute sulphuric acid solution. As a current passed from one liquid to the other, the surface tension of the mercury meniscus changed, resulting in the mercury column advancing or receding in the capillary. A beam of light directed upon the junction of the mercury and acid could be focussed to a camera having a movable film. The movement up and down of the mercury column when photographed upon a moving film thus recorded the electrical changes of the heart. This instrument was extremely sensitive to quick changes of current, but the inertia of the mercury did not allow ideal curves.

A very sensitive galvanometer which would not lag in recording quick changes of potential was desirable, and Einthoven (1903) adopted the D'Arsonval galvanometer principle in constructing the string galvanometer. This instrument consisted of an extremely fine platinum or silver-coated quartz fibre carrying a current between two very powerful electromagnets. As the current moved up or down the delicate fibre, it was attracted toward one or the other of the magnets. The slight changes of position of the wire were magnified by a microscope, and the image was recorded on a moving photographic film. Since it was impossible to press electrodes immediately upon the intact heart, current was drawn from the two arms or from the arms and a leg. The sum of the action currents within the body was indicated in the two leads, but since the heart produced a varying current which was of short duration, the action current of the heart could easily

be distinguished from all other currents. The heart, then, could be considered as an organ, the action currents of which could be delivered to electrodes through the fluids and tissues of the body which act as electrical conductors. During the first decade of the Einthoven galvanometer, a number of physiological studies were made upon the action current of the heart, in which it was shown that the characteristic of the diphasic action current varied in different physiological and pathological conditions. The first clinical studies upon the human heart were made in Leyden where the leads of the galvanometer passed from the physiological laboratory to the hospital, nearly a mile away (1906). This instrument was first known as the "telecardiograph." The clinical side of electrocardiography has been studied to a great extent by Lewis, Kahn, Hoffmann, Pardee, Wilson and others. Cardiac disturbances in rhythm, such as bradycardia, tachycardia, extrasystole, auricular fibrillation and heart block, and also disturbances in conduction associated with hypertrophy of the heart muscle, atrioventricular bundle block and possibly changes due to the coronary circulation are the most outstanding conditions which influence the type of the electrocardiographic curves. The instrument is of secondary value in the diagnosis of valvular defects of the heart.

In recent years, new types of galvanometers have received great use in electrocardiography. These instruments, known as oscilographs, instead of requiring a very sensitive galvanometer, use a quick responding type which reacts to the feeble heart currents only after they have been amplified several thousand times through vacuum tube amplification.

## MEDICAL ECONOMICS

### MEDICAL HEALTH SERVICE\*

H. A. LUCE, M.D.

*Chairman of the House of Delegates*

It is probable that the desire of those assembled here is that the reasons for the action of the special meeting of the House of Delegates at Flint be analyzed, as much as to learn what actually took place. A history of the events leading to the action, the background of the situation and certain principles relative to medical service must be considered. Unless one has pursued intensive study or has been

\*Extracts from a speech given by Dr. Henry A. Luce before West Side Medical Club, May 3, 1934.

in actual practice during the entire period, he has not a full conception of the changes that have taken place in medical practice during the past twenty years. A vision of the future must of necessity be attempted to properly rationalize our present plans.

At the Pontiac meeting of the House of Delegates in 1932, a committee on Medical Economics was approved and its appointment authorized. The subject of health insurance was considered at two subsequent meetings of the House of Delegates. On account of conflicting reports about the operation of health insurance in England, a commission was sent to England in January, 1934. On the commission's return, each member prepared a separate report, and it will be of interest to know that the one who went to scoff, remained to pray. It was *his report* that had to be toned down and soft-pedaled rather than that of Dr. Sinai. However, an outstanding remark in the joint report of the commission, emphasized at several subsequent sessions, namely, "*In presenting this report your commission wishes to record its opposition to the introduction into the United States of any system of health insurance now existing in any country of Europe,*" is of noteworthy importance. Another point to be emphasized is that the faults of the English system are the result of the British Medical Association being unprepared with any plan at that period in British history when a plan was needed.

The medical profession in this country today is much in the same position as the early settler in the prairie areas of the West. He sees in the distant horizon the smoke and flames of an oncoming devastating conflagration. He has two chances: wait and hope the wind will change, or start a back fire and save his possessions and protect his future. Those in the medical profession who say that everything is going to be all right in a short time, that the medical organizations should not lead in the formation of plans for service, are waiting in a vain hope, not predicated on logic or history, but based on prejudice and negativism. To those who are supinely confident that soon all is coming back with the return of prosperity, my thoughts return to my early years with their colorful fairy tales in which right always triumphed, but in the cold realities of later life we often see our ideals dragged in the dust because those who should champion their cause sit idly by in anticipation of some eleventh-hour miracle.

Do not condemn your fellow practitioner for his connection with organizations operating at a profit: the compensation surgeon working for an insurance company. Do not condemn the public health doctor as an individual. Do not condemn the reserve corps of the Army and Navy. Do not condemn the veterans' bureau doctor. Do not condemn the doctors on hospital staffs doing free work or on a part pay basis. You know well enough that, should they refuse, there are scores of others willing to take the position at a moment's notice.

Rather direct your energies towards wrong systems; meet the problem in a constructive, not a destructive, way.

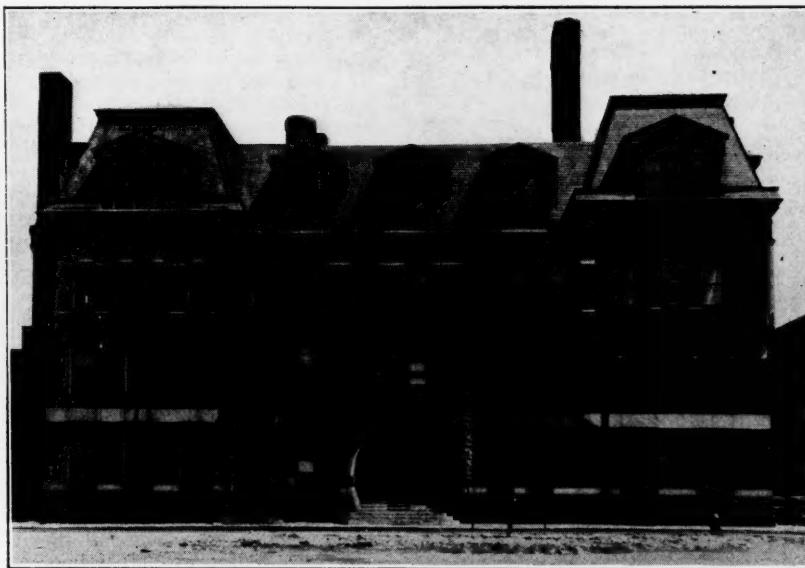
The costs of medical care are incurred in a hazardous, uncertain and unbudgetable way. How much longer do we expect a nation, system-minded, production at minimum cost, students, flooded with socially-minded leaders, will keep from attacking the problem of the distribution of medical care?

The gap has existed for years between those needing service and those able to furnish it. It was recognized before the depression and the depression widened it. It is fair to conclude that the gap will not be closed with a return to normalcy. The majority of the proponents of health insurance in the medical profession are men past that period

in life which welcomes change, but have in addition a greater sense of responsibility for human life. They feel that the full benefits of the progress that medical skill has achieved should be available to all humanity. Two factors seem to keep the

of Approval by the House of Delegates only approval of the following points was made, namely:

- a. Approval of the general principles of the plan.
- b. Approval for discussion of the plan with employers and employees.



WAYNE UNIVERSITY COLLEGE OF MEDICINE

This is an unusual picture of what was long known as the Detroit College of Medicine and Surgery. All the old buildings occupying the triangular lot across the street have been razed and the ground is in process of being made into a park. The widening of Gratiot Avenue has resulted in a clear, open space from the college steps. Immediately to the rear of the college are the laboratory buildings and a building in which is located a large auditorium and the Medical Library, which is the medical department of the Detroit Public Library. On a large wooden sign-board over the entrance of the college is the new name of the institution which shows it to be a unit of Wayne University. Each alumnus of the Detroit College of Medicine and the Detroit College of Medicine and Surgery will be given a certificate designating his relation to the newly named institution.

See page 336 for announcement of the Detroit College of Medicine Alumni Day, which is being held this year on June seventh.

patient and the doctor apart—the patient's inertia and an economic cause. The patient's inertia is illustrated by his indifference to such free treatments as are even now available—such as vaccination and immunization in general.

The old custom of collecting from the thrifty and letting the shiftless go by is open to criticism. It is unfair that the medical profession should carry the load of the services to the unfortunate when the burden should fall on the community as a whole. There should be no charity or clinic cases except such as are actually needed for teaching purposes or are personal selections by the physician himself. The public feels that the doctor is foolish for assuming such a tremendous burden as he has been accumulating.

Remember, the government has the power to take over the entire medical work of the units under its control, and by arranging to have work done by salaried government employees it can go far towards establishing state medicine on a permanent basis.

There is nothing new or revolutionary about the idea of group activity and control. Industry has long recognized it. Only we in the medical profession have desperately tried to hold on to our halos, have tried to assure ourselves that our profession is not subject to fundamental laws.

You will notice specifically that in the Resolution

c. Approval of an action to determine the legal status of the *Mutual Health Service* and the necessary action for the organization of the Mutual Health Service for presentation to the House of Delegates for final action.

All of this is safeguarded by a further resolution that the plan for Mutual Health Service shall not be inaugurated in any county without the approval of the County Medical Society as well as the State Medical Society. This should prove to anyone that no plan has been adopted nor will receive action without due and timely notice. However, the House of Delegates felt that the continuation of the work of the Committee on Medical Economics should be encouraged and by a unanimous vote near the close of the session gave the committee an expression of confidence.

The delegates have returned to their respective county societies and have been criticized for actions that did not take place. They showed almost unanimous willingness to be guided by their constituents. The problem is now flatly in the lap of the members of the profession. No irrevocable action has been taken by the House of Delegates. You as members of the profession are to decide; you must assume the responsibility. It is a grave responsibility whether you accept or reject. It is not to be treated lightly nor to be decided without careful

and thoughtful consideration. Make your decision in a cool, analytical manner. Try to visualize the future as well as humanly possible. Study the trend of the present as well as the history of the past. Let no preconceived ideas influence you. Give no premature instructions to your representatives. Between now and the September meeting, which is in all probability the earliest the matter will be considered, much can transpire. Other plans\* are in the process of development. All honor to the proponents of "back fires" to protect our traditions and render adequate service to the public.

Again I repeat, it is your problem, your responsibility. You cannot evade it. The public look to the medical profession for guidance because it is a public economic problem and who is better qualified than the medical profession to decide? History is in the making; good or bad as we determine. The politicians and commercial interests have determined the outcome of the matter in other countries to the detriment of the public as well as the medical profession. If, in your opinion, no action should be taken by the medical organization, have the courage to say so; go on record to that effect. Write a letter to the Economics Committee stating your reasons. If you are correct, posterity will crown you. If you are wrong, it's your requiem. By all means express yourself. If you are convinced that the Economics Committee are working along the right course, lend your assistance. Criticize their plan constructively. Write the committee your reasons for thinking certain parts of the plan are unworkable. When you come to write constructive things, you will find it more difficult than mere oral denunciations. The committee bravely acknowledges the experimental state of the plan and are aware of the seriousness of its principle. They will welcome facts and suggestions. It is your duty to take your share of the load.

#### MODERN EXTENSIONS OF BEAUMONT'S WORK

*Note.*—The *British Medical Journal* in its issue of April 14, 1934, contained the following review of the Beaumont Lectures given in Detroit in 1933 and printed in the March-May numbers of this JOURNAL. Since these lectures were delivered in a city in our own State and since they commemorated the one hundredth anniversary of the publication of Beaumont's work on Digestion, we reproduce the review by the *British Medical Journal*.

"The year that has just passed was the centenary of the publication by Dr. William Beaumont of his classical book, *Experiments and Observations on the Gastric Juice and the Physiology of Digestion*. This described his investigation on his patient with gastric fistula—Alexis St. Martin. Beaumont's studies became known throughout the world, and his methods were applied by Claude Bernard to lower animals and later by Pavlov to dogs. Of succeeding physiologists none in America has advanced our knowledge of the subject so much as Professor W. B. Cannon of Harvard, and in a small work compact with information he has brought up to date the modern extensions of Beaumont's studies. The lectures formed a course in the Beaumont Foundation Lectures, and commemorate the hundredth anniversary of the publication of Beaumont's classical work.

"Beaumont's book is essentially practical and descriptive of his actual experiments, but at times he was tempted to express certain theoretical opinions regarding the nature of processes which he could not fully determine by observational methods.

\*The speaker here referred to the plan being inaugurated in Wayne County with which he is in entire accord.

Among the opinions were those included in a brief chapter entitled, 'Of Hunger and Thirst.' In regard to both of these sensations Beaumont took a view which was contrary to the accepted physiological teaching of his day, and, though his own explanations were incomplete, he did approach nearer to the truth than the authorities. Beaumont declared that thirst is a sensation arising from the mouth and fauces, a feeling of dryness due to evaporation of moisture from the surfaces of those regions because the passage of the respired air took up the moisture at a rate faster than it could be supplied. He suggested that the failure of a secretion adequate for keeping the surfaces of the pharynx moist was due to a viscid state of the blood resulting from an inadequate water supply. That thirst has a local source in the mouth and pharynx is shown by the relief obtained from painting the back of the mouth with cocaine; sipping a small amount of water will temporarily relieve, or holding in the mouth a substance which causes a secretion of saliva, like lemon, will lessen, thirst. In thirst the salivary glands, whose secretion is about 98 per cent water, are unfavourably affected by the deficient general water supply. Such a deficiency may occur in people deprived of water, or temporarily when large amounts of fluid are secreted into the alimentary canal in the form of gastric and pancreatic juice during digestion. Naturally, in our ordinary eating habits we take water with food as we eat. This water is soon absorbed after its passage through the stomach, and serves to compensate for the loss of water from the body in the digestive secretions which are poured out as digestion continues after the meal is over. Instead of there being an increased viscosity of the blood as Beaumont suggested, there is a reduced blood volume and an attendant reduction of the flow of saliva. Beaumont's view of hunger was that it was 'produced by a distension of the gastric vessels, or that apparatus, whether vascular or glandular, which secretes the gastric juice.' He reasoned that the sensation must have its source in the stomach itself and that it was an expression of local congestion of the mucous membrane, and he cited the fact that application of food to the internal coat of the stomach results in an immediate throwing out of a quantity of fluid which mixes with the food. Careful observation, however, reveals that hunger is intermittent or recurrent in character, and Professor Cannon demonstrated in 1910 that hunger pangs were due to cramplike tightening of the smooth muscle of the gastric wall. These may occur in the absence of nervous government from the spinal cord and brain, but they are influenced reflexly through the vagi, and may be abolished in strong emotional states. Alcohol and tobacco cause cessation of the hunger contractions, as do vigorous muscular exercise and the old habit of tightening one's belt, at least for a time.

Beaumont noted that in his patient Alexis St. Martin symptoms of general indisposition were associated with considerable disturbance of the processes of the stomach: 'no gastric juice can be extracted, not even on the application of alimentary stimulus . . . food taken in this condition of the stomach remains undigested for twenty-four or forty-eight hours, or more, increasing the derangement of the whole alimentary canal, and aggravating the general symptoms of the disease.' Not only debilitating disease but also exhausting labour is associated with failure of proper action of the digestive organs. Pavlov's experiments demonstrated the effect of the nervous system on the digestive secretions; not only was there a direct vagal secretory effect on the stomach and pancreas, but a psychic secretion took place when the higher centres of the brain were stimulated by sight or smell of food, and these higher centres then stimulated the vagal

nuclei. Cannon showed that attendant on the psychic secretion from the digestive glands there is a psychic increase of muscular tone, both being consequences of vagal excitation. On the vagal and the sacral visceral nerves depend, therefore, important relations of digestion and health. But the digestive process may also be profoundly disturbed through the positive action of the sympathetic division of the autonomic system, a division which is commonly opposed in action to the cranial division and which has, consequently, an inhibitory effect on muscular tone and on the secretions of the digestive glands. Beaumont reported the influence of extreme anger upon gastric digestion as observed in Alexis St. Martin. Not only emotion but also pain can affect the digestive process.

"Professor Cannon's own work has shown that the inhibition of the digestive process is but a single item in a variegated picture produced by stimulation of the sympathetic nervous system. In addition to the well-known acceleration of the heart and rise of blood pressure, there is a complex of other changes, including redistribution of blood in the body, discharge of extra corpuscles from the spleen, more rapid coagulation of the blood, increase of blood sugar, and dilatation of the bronchioles. All these may be brought about by conditions which excite the sympathetic system; prominent among such conditions are external cold, hypoglycæmia, motion, and emotion. The sympatheticoadrenal system is thus a protective agency in times of crisis; but much more an effective factor in maintaining constancy of the internal environment, rendering the higher mammals independent of external changes of temperature and likewise independent of possible disturbances which might be caused by our own actions. This fitness for flight or fight is of great value to the organism. The repercussion of the emotions on digestion suggests some practical advice. Since the total complex of bodily changes associated with emotional excitement is properly interpreted as preparation for struggle, we should try to take a rational attitude towards any exciting incident which may occur. We should decide that if there is action to be engaged in, the excitement should be allowed to run its full course without limitation. If there is nothing to be done in the circumstances, however, it is unwise to permit the organism to be deeply disturbed, and especially the fundamentally important functions of digestion to be inhibited. When an occasion arises which provokes a degree of excitement that cannot be controlled the reasonable behaviour is that of working off in hard physical labour the bodily changes which have occurred in preparation for vigorous effort. We should dig till we gently perspire. Often the excited state can thus be reduced and the body, instead of being upset, is restored to normal."

#### INJURIES OF THE EYE (*The Rainbow*)

The earhandicapped who read lips are dependent on their eyes. They should keep their eyes in the best possible condition. Dr. H. H. Seabrook of New York is reported to have said, in part: "Our country leads the world, apparently, in the brilliancy of its artificial illumination and certainly leads the world in ocular exhaustion, discomfort and congestion. When gas came into general use these troubles began to increase, and a further increase was in evidence as the incandescent electric lamp came more and more into fashion. Both here and abroad oculists agree that the kerosene burner is the least harmful artificial illuminant. The incandescent lamp has given rise to more chronic eye degenera-

tion and disturbance than any other light used for near work."

All of the doctors said that by a little care the incandescent bulb can be made almost as harmless as the kerosene lamp. They advised the use of illumination by reflection student lamps and ground-glass bulbs.

Many years ago we had noticed the disagreeable effect of the incandescent bulb. Everyone has experienced the after-images after looking at a strong electric light. At that time we used a very simple device in order to make the illumination less disagreeable by placing the opaque disc under the light instead of above the light. The light was reflected from the ceiling and proved to be very agreeable to the eye. It was, as far as we know, the first design for indirect illumination, at least in Detroit, although such a simple device may have been used by many others in many localities. It was, however, if we remember correctly, of sufficient interest to be mentioned in the *Detroit Times* in a little item. The warning concerning a too bright illumination should be heeded. Automobile drivers must be impressed by the effect of headlights which are too bright. An illumination which exceeds the physiological demands cannot help but be injurious to a more or less great degree. We know of snow blindness even if it is usually only temporary. The eye is a precarious organ which demands protection from unnecessary injuries.

#### PRIZE ESSAY—THE DOCTOR

The painting entitled "The Doctor," by Luke Fildes, has been long familiar not only to the medical profession, but to the laity as well. The original, which was painted in 1891, is to be found in the Tate Art Gallery, London. Fildes was born in 1844 and died in 1927. The painting in question is presumed to represent the home of a "crofter" in the Highlands of Scotland. The doctor employed by Queen Victoria is credited with the ministrations to the sick child. A sculptured reproduction was on exhibition a few weeks ago in Detroit and a prize was offered to the person giving the best description of the sculptured picture. The prize was awarded to Mr. U. R. Bailey of Detroit, the father of Dr. Louis J. Bailey, one of the younger members of the Wayne County and Michigan State Medical Societies. The following is Mr. Bailey's interesting description of the picture:

"Standing before the reproduction of The Doctor, I was filled with awe and admiration for the ability of the artists who could portray such a touching scene and bring to the mind of the observer the great need and necessity for the family physician in the home. It never occurred to me that there was any incongruity in this sordid setting, although the poverty and squalor would seem to indicate that this doctor was out of place in this sort of home. However, he seemed to be part of the scene, as indeed that is exactly the role played by the family physician; he knows no class, no color, sect or creed. His is a mission of mercy; he ministers unto not only the ills of the body, but he renders surcease to the sick soul. His knowledge of medicine, psychology, and human nature fits him to act as doctor, advisor, counsellor, and friend. Who has not felt that sense of security the moment the doctor enters the sick chamber. He seems to dispense that invisible, intangible, subtle something that at once makes us feel better in mind as well as in body. Many a man has gone forth from beside a sick bed, his spirit brightened, his morale strengthened by the kindly words and human touch of the family physician, who knows just how to prescribe

for those heartaches that come when sickness and disease attack our loved ones.

"We need The Doctor in our homes now more than ever. We need his wisdom, his counsel, his friendship and sympathy. We need him as the Galileans needed the Great Physician, who taught His wonderful precepts of health and manhood.

"The look of perfect confidence upon the father's face in the picture, and his attitude of complete submission to the will of the doctor, indicates that he is satisfied that all within human power will be done to restore health to his loved one whom he adores. This confidence is typical of the medical profession. Such faith has been born by centuries of honest, faithful service on the part of the family physician.

"The look of deep interest upon the doctor's face indicates that he feels the same pangs of pain, the same sense of suffering and sorrow felt by the parents, and that same look assures us that he will use all his great surgical skill and medical knowledge to restore to health the little child who is passing through the shadows.

"The doctor's mission is one of mercy and compassion, and his profession 'seems like God's' because it is a mission of untiring, unselfish service."

#### STREAMLINES GONE DAFFY

Ah just cam frae Shanty Toon, wi streamlines  
on ma car,  
It's fu' o' streamlined gasoline that oucht tae tak'  
me far  
Aboot th' streamlined countryside, where green's th'  
meadow patch,  
An' A've a streamlined o'ercoat, wi' colors a' tae  
match.

Ah hae a freen' wha's aw'fu' sick wi' streamlined  
pains acute,  
That rins frae taes tae gowden hair that's streamlined  
roon aboot,  
An' A've a freen' wha's apt tae tell a streamlined  
story auld  
That wull bring th' smiles that's streamlined a' doon  
frae where yer bauld.

An' there's that chap wha whittled oot a streamlined  
wooden gun,  
An' foon' a streamlined passageway richt oot intil  
th' sun,  
An' there wis placed richt i' his way a gatlin' gun  
tae take  
That is fu' o' streamlined bullets tae help him mak  
th' break.

Th' Doctor used tae gi' us pills th' color o' guid  
wine,  
An' cured oor guid auld streamlined chills wi' capsules  
o' quinine  
That was mixed wi' streamlined calomel that griped  
a streamlined grip,  
An' sometimes he gi'ed a sample frae th' bottle on  
his hip.

Noo, th' lassies a' are dressin' wi' streamlines o'er  
their hips,  
An' using oop oor ink that's red tae streamline  
roon' their lips,  
Th' artists too are drawin' stuff wi' streamlines  
roon aboot,  
Bit wha is there on earth tae tell just what it's  
a' aboot?

WEELUM.

#### SOCIETY ACTIVITY

#### THE DOCTOR CONTINUES TO LOOK AT PUBLIC HEALTH

Your Committee continues to advocate a procedure whereby the family physician will actively participate in the community health program by providing preventive medical services for his clients. Such a program is by no means a substitute for the properly organized full-time local health service with a well-trained health officer and a qualified personnel of public health nurses and health educators. Such units can in most instances be economically established on a county-wide basis except where the population is so sparse that several counties may be combined into a health district. Such a health department should work hand in hand with the qualified and prepared physician whose influence in the field of health education may be materially expanded.

In our report published in the April issue of this JOURNAL it was stated that a schedule had been mapped out for the spring months with the expectation of carrying the program of professional participation into every part of the state. During the past two months the holding of a number of conferences has been made possible through the courtesy of the W. K. Kellogg Foundation of Battle Creek.

On April 19 an all-day session was held in Bay City at the request of Dr. Louis F. Foster, a member of this Committee and Secretary of the local Medical Society. Dr. J. H. McEwan, President of the Bay County Medical Society, presided at the various sessions and there were approximately sixty physicians in attendance.

In the morning a Clinico-Pathological Conference was held in the Auditorium of the Elizabeth McDowell Bialy Memorial of the Mercy Hospital. The clinical discussion, which was devoted to the control of communicable diseases, was opened by Dr. D. J. Mosier of Bay City. Other members of the Bay County Medical Society took a very active part in the discussion which followed. The clinical figures were summarized by Dr. John E. Gordon of Detroit, who emphasized the important diagnostic points of scarlet fever and conditions with which it might be

confused. The case which was reported at the Conference was taken from the files of the Herman Kiefer Hospital by Dr. J. A. Kasper, Pathologist at that institution, who conducted the Conference.

At the afternoon session Dr. Gordon spoke on the control of scarlet fever and discussed his recently conceived plan for shortening the quarantine period of scarlet fever cases and reported the results thus far obtained.

Later in the afternoon the meeting was adjourned to the Wenonah Hotel, where a symposium on the diagnosis, treatment and control of tuberculosis was presented. Dr. Wm. A. Evans of Detroit spoke on the importance of the x-ray in the diagnosis and follow-up treatment of tuberculous lesions in the lungs. This discussion was illustrated by comprehensive exhibits of chest films which Dr. Evans used to emphasize the influence of x-ray examination. He illustrated the successful results which may be obtained by the various forms of collapse therapy. Another exhibit showed the pathological lesions together with the roentgenological films. Dr. Bruce Douglas of Detroit, President of the Michigan Tuberculosis Association, summarized a survey recently conducted among high school students in and near Bay City. He placed particular emphasis upon the need for early diagnosis and his discussion was supported by films showing the healed childhood type of tuberculosis as well as active cases of the adult pulmonary type.

At the dinner hour there were present as guests of the Bay County Medical Society all the members of the Board of Supervisors. Dr. L. O. Geib, Chairman of the Committee on Preventive Medicine of the State Medical Society, outlined the plan for medical participation which was adopted by the Society at its last annual session held in Grand Rapids. This was followed by a brief talk by Dr. Douglas, in which he emphasized the economies to the county which might accrue by a program for the early discovery of tuberculosis through the employment of a case finding program involving the use of the tuberculin test followed by a roentgenological study of active reactors. Dr. Henry F. Vaughan of Detroit then spoke on medical economies and their relationship to the public health and described in detail the program as it has been applied in Detroit

by the Wayne County Medical Society, in rural sections of Michigan by the W. K. Kellogg Foundation and in communities in other parts of the country to which the work has been extended. He stressed the need for the control of communicable diseases through the active coöperation of practicing physicians working with the local health department, the latter acting in an administrative and educational capacity. This session in Bay City marked the first of a series to be held in various parts of the state.

During the second week of May, again with the coöperation of the W. W. Kellogg Foundation and its staff, a series of meetings were participated in by Doctors Geib, Gordon and Vaughan of Detroit and Dr. G. M. Byington of Battle Creek. The first conference, which was held in Owosso on May 7, was arranged by Dr. W. E. Ward, Secretary of the Shiawassee County Medical Society. The members of the Livingston County Medical Society were invited as guests. The control of communicable diseases was again the subject of Dr. Gordon's discourse and the other three speakers devoted their time to the discussion of the program of medical participation which has been outlined in the recent issues of this JOURNAL.

On Tuesday, May 8, this same group moved on to Traverse City, where at noon Dr. Vaughan spoke to the Rotary Club and in the evening all participated in a joint meeting of the Grand Traverse-Leelanau County Medical Society, this meeting having been arranged by Dr. E. F. Sladek of Traverse City. The following day the program was repeated at the meeting of the Luce County Medical Society held at the Newberry State Hospital. This meeting was arranged by Dr. Geo. F. Swanson, Secretary of the local society, who had invited as their guests the physicians living in the eastern section of the Upper Peninsula.

On Thursday, May 10, the group moved on westward to Ironwood and the conference that evening was held at the St. James Hotel in Ironwood, the meeting having been arranged by Dr. F. L. Reynolds, Secretary of the Gogebic County Medical Society. On Friday the closing conference of the group was held in Menominee jointly with the physicians from Marinette, Wisconsin, and representatives from the neighboring areas. This meeting was arranged by Dr. Wm. S.

Jones, Secretary of the Menominee County Medical Society, and Dr. T. J. Redelings, representing the physicians of Marinette.

Word has also been received that the participating program, with certain modifications, is being applied in a great number of communities not only in the United States but abroad. The Medical Officer of Health of the Borough of Kensington, London, England, reports that the program is being put into effect April 1, 1934, with respect to diphtheria prevention. This is an innovation in England. The general medical practitioners who are coöperating are being paid at the rate of ten shillings per diphtheria immunization. The health authorities are carrying on an intensive educational campaign. Five pages of the London Annual Report for 1933 are devoted to this program.

In Albany, N. Y., the Medical Society has undertaken a tuberculosis case finding program under coöperative arrangements so that all tuberculin tests and general physical examinations will be given by coöperating physicians in their own offices. For the present the work is restricted to the entering children in the senior high schools. The city has appropriated \$4,000 with which to pay the physicians.

In Charleston, W. Va., eighty-eight of the 110 local physicians have coöperated in a diphtheria prevention program. Beginning their work in November, the results have been so promising that 50 per cent of the school children and also 50 per cent of the preschool children have been protected. There were no local funds with which to compensate the physicians for services to indigents, but more than 50 per cent of the parents paid the coöperating doctor \$1.00 per treatment.

In St. Louis, Mo., some 800 members of the County Medical Society are coöperating with the Health Officer in a diphtheria prevention program.

### ECONOMICS

The JOURNAL is a medium in which members may present their views and opinions. The Committee on Economics is desirous of securing the opinion of members in regard to the proposed plan for mutual health services. Have you read the plan? Are you familiar with the proposals that are being

advanced by lay groups, social workers, governmental officials and hospital groups? What is your opinion, advice and recommendation? Have you another solution?

We commend the attitude reflected in the *Oakland County Society Bulletin*, and reprint the following expressions in order to encourage others to record their views:

#### MUTUAL HEALTH SERVICE, FARNHAM'S OPINION

The past year in this country has been pre-eminently the "New Deal" year. Most of the measures have been frankly experimental, some of them are now considered quite frankly failures. Yet progress has certainly been made.

The report of the Medical Economics Committee to the House of Delegates of the Michigan State Medical Society on April 12th at Flint presents a "New Deal" in Health Service to Michigan.

The Mutual Health Service plan as presented by this committee certainly is a thoughtful, constructive and courageous effort to answer our critics in a constructive way and better the health situation in this state. As a laboratory experiment in Medical Economics it appeals to me very strongly and the manner in which it was received by the House of Delegates is very encouraging to some of us who have felt for a long time that something of this sort must and should come but feared that it might come in a much less constructive way with a minimum of benefit to the public and a maximum of danger and detriment to the Medical Profession.

The work of this committee cannot be too strongly commended and I say more power to them and to the rapid working out of their plan.

L. A. FARNHAM.

#### BURKE, "ON MUTUAL HEALTH SERVICE"

Realizing the trend toward health insurance, by insurance companies, by industry and by government, and sensing that control of such a movement would be removed from the professions unless we take the initiative, our State Medical Society has seized upon an auspicious moment to promulgate a plan which seems worthy of trial. First and foremost it provides adequate medical service with free choice of physicians and avoids the pitfalls of cash benefits. It embraces only those individuals who have been unable to buy and pay for adequate medical attention. An estimate of the returns from this group under the proposed plan indicates a substantial increase in revenue to the physician. The cost is to be borne by the individual and/or the employer following the growing social trend which makes industry partially responsible for the health of its employees. Lastly the plan avoids control of the profession by the insurance groups, hospitals or government. The side effect of stimulating post-graduate study may prove to be one of its most valuable assets. These desirable features merit serious consideration and I feel that the least we can do is to withhold adverse criticism until a fair trial has been allowed.

C. G. BURKE.

#### OTTO BECK'S REACTION TO MUTUAL HEALTH SERVICE

My reaction to the proposal of the House of Delegates for a Mutual Health Service is one of indecision. There is no doubt that the families of low income would benefit providing they could be induced to take advantage of the service. For the plan to

be successful the service must be compulsory and require all employers to contract the services for their employees. This would require legislation by our state government.

The service would benefit physicians in large industrial areas but it is my opinion that those physicians practicing in residential and agricultural districts would have such a small number of insured patients that they would not be benefited.

I am anxious to see the plan given a fair trial. At least it is a splendid gesture of the Michigan State Medical Profession to Society.

O. O. BECK.

## A SUMMARY AND COMPARISON OF MATERNAL AND INFANT MORTALITY RATES IN THE CITY OF HOLLAND COVERING A TEN-YEAR PERIOD

WM. WESTRATE, M.D., HEALTH OFFICER  
*Holland, Michigan*

An article under the heading, "Every Baby Needs a Mother," appearing in the February issue, 1934, of *Good Housekeeping* raised certain doubts in my mind, so that I immediately set out to verify or disprove certain statistics there set forth as relating to our own city of Holland.

Here are a few of the statements as set forth:

"In the thirteen years since *Good Housekeeping* first advocated the passage of the Sheppard-Towner Bill giving aid to prenatal cases, over 200,000 babies were left motherless in the United States. Thousands of maternal deaths are preventable and lack of prenatal care was considered an important factor in this death rate. Another and most important factor was known to be the attitude—one might truly say the carelessness or the incompetence—of the attending physicians, but this was a stone wall as long as the medical fraternity refused to admit its culpability. Now it has made such an admission, assuming the responsibility for 61.1 per cent of the preventable deaths in New York City for the three-year period 1930-32, a measure of responsibility that by no means applies to New York City alone. New York has the highest maternal mortality rate of the large cities of the world. It had 2,341 deaths, and from exhaustive studies it was thought that 1,343 were preventable. Sixty-one and one-hundredth per cent of these preventable deaths were due to the incompetence or carelessness of the physicians and 36 and a fraction per cent was due to the negligence of the mother, with the hospitals in some directions sharing the brunt."

"To be exact, they divided the casualties into four groups, A, B, C, D. In A, which represents the slum population, where extreme poverty begets overcrowding, uncleanliness, and widespread ignorance, and where free medical care is available, there were 275 deaths, of which 193 could have been prevented. Of these, the physician was blamed in 115 cases, the patient in sixty-seven, and the midwife in eleven. In B, which stands for the better-paid workers, whose living standards are somewhat higher, but who must rely on municipal and voluntary hospitals for free medical care, there were 653 deaths, 407 of which were preventable. The fault here was upon the physicians in 278 cases, upon the patient in 114, and upon the midwife in fifteen. Under C were listed the white-collar class, in which living conditions and general education are much higher in the scale. They are able as a rule to pay for their medical needs and usually compose the clientele of the general practitioner and less highly-trained specialists. In this group there were 572 deaths, 345 of which were preventable. In 245 cases the physicians were held responsible, in eighty-eight the patient, and in three the midwife. In D, which lists the more fortunately situated who can afford highly-trained specialists and the best hospitals, there were only twenty deaths, ten of which were deemed avoidable. Nine of these were attributed to the physicians and one to the patient. A significant supplement was another table revealing that, with the exception of D, the highest number of fatalities occurred in municipal and voluntary hospitals, while the lowest was in obstetrical hospitals or among women whose babies were born at home."

The above paragraphs are quoted almost verbatim.

It is not my desire to dispute figures and statistics

as set forth by *Good Housekeeping*, but I would like to insert here the statement that someone has made, that "statistics can be awful liars." It is my desire to show that the city of Holland has a medical profession that gives its mothers intelligent, skillful and painstaking care as evidenced by the facts and figures taken from our records, covering the years 1924 to and including 1933. I also wish to show that the Holland Hospital is an institution that ranks very high in its medical care of mothers and babies.

Here are the figures—which figures may be verified by the records of the city of Holland and the Department of Health at Lansing.

	BIRTHS	MATERNAL	INFANT DEATHS
		DEATHS	UNDER AGE 1 YEAR
1924	349	0	26
1925	341	1	35
1926	295	0	31
1927	319	1	19
1928	351	2	22
1929	352	0	26
1930	342	1	18
1931	338	0	29
1932	256	1	22
1933	238	0	26
	3,181	6	254

INFANT DEATHS	DEATH RATE	OTHER CAUSES
STILLBIRTHS		
1924	26	20
1925	35	17
1926	31	16
1927	19	8
1928	22	7
1929	26	10
1930	18	12
1931	29	15
1932	22	17
1933	26	15

### HOLLAND HOSPITAL

Total number of births from June, 1924, to Feb. 13, 1934	1,195
Total number of infant deaths	74
a. Stillbirths	28
b. Prematures	30
c. Babies died after birth	
Total number of maternal deaths	5

It will be noticed that five of our maternal deaths occurred in the hospital. Two of these were cases from the country surrounding Holland and do not belong to the city of Holland proper. One of these was a pneumonia case and, in all fairness, death could be ascribed to that disease rather than to childbirth. Everybody with any intelligence knows that the serious cases are brought to the hospital so as to receive expert care. Naturally we expect a higher mortality in such type of cases. How absurd to blame our hospital for five of our six deaths when the nature of the case is such that death ensues in spite of the best care that a well equipped hospital can provide. If one takes statistics on their face value, one could argue that it is safer to have babies at home, but who can be so illogical as to leave the most important factor out of his deductions. Of our six maternal deaths, four were due to placenta previa with hemorrhage, one was due to pneumonia and embolism, and one to embolism alone. Scrutinize this carefully and compare this with the New York classification. Could any of these deaths have been prevented? Such cases can be saved when our physicians acquire divine attributes.

During the ten-year period under discussion, we have listed 254 deaths of infants under one year of age. Of these, 117 were stillbirths and the remainder died of the following causes:

CAUSES OF INFANT DEATHS UNDER 1 YEAR OF AGE	
1. Premature	38
2. Inanition	14

3. Enteritis .....	10
4. Convulsions .....	8
5. Cerebral Hemorrhage .....	6
6. Bronchitis .....	5
7. Congenital Debility .....	5
8. Suffocation .....	4
9. Congenital Heart Lesion .....	3
10. Atelectasis .....	3
11. Respiratory Disturbance .....	3
12. Pneumonia .....	2
13. Cerebral Meningitis .....	2
14. Peritonitis .....	2
15. Intussusception .....	2
16. Congenital Malformation .....	2
17. Hydrocephalus .....	2
18. Pleuro-Pneumonia .....	2
19. Hemolytic Jaundice .....	2
20. Icterus .....	1
21. Intestinal Hemorrhage .....	1
22. Bacteremia .....	1
23. Hereditary Lues .....	1
24. Tubercular Meningitis .....	1
25. Acute Nephritis .....	1
26. Cesarean Operation .....	1
27. Acute Pulmonary Edema .....	1
28. Anemia and Streptococcal Throat .....	1
29. Influenza .....	1
30. Toxemia .....	1
31. Congenital Stenosis of Stomach .....	1
32. Cyanosis .....	1
33. Injury at Birth .....	1
34. Accidental Suffocation .....	1
35. Persistent Thymus .....	1
36. Suffocation due to Mucus .....	1
37. Hemophilia .....	1
38. Eclampsia .....	1
39. Infection of Lymph Gland .....	1
40. Prolonged Labor .....	1
41. Diabetes .....	1

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One hundred and thirty-seven babies died of the above causes during the years 1924 to and inclusive of 1933. The total number of births was 3,181. Bringing this down to mortality rates per 1,000 for the city of Holland, we have the following:

INFANT MORTALITY RATES FOR CITY OF HOLLAND FOR PAST TEN YEARS

1924	58.1
1925	53.0
1926	66.7
1927	25.9
1928	20.9
1929	41.2
1930	41.8
1931	52.1
1932	67.7
1933	64.2

Compare these with the statistics for the State of Michigan as a whole and we have something brought to our attention that is rather startling in its significance.

INFANT MORTALITY RATE COMPARISON

	MICHIGAN	HOLLAND
1924	72.2	58.1
1925	75.8	53.0
1926	77.6	66.7
1927	67.7	25.9
1928	69.8	20.9
1929	66.9	41.2
1930	62.8	41.8
1931	57.3	52.1
1932	54.3	67.7
1933	50.8	64.2

It will be noticed that in 1928 we had a mortality rate of 20.9 which has climbed up to 64.2 for 1933. The mortality rate for the State of Michigan for 1933 was 50.8. What has happened in Holland? It is not quite evident, but my first thought would be lessened prenatal care. At this point it may be interesting to know that statistics gathered by the Metropolitan Life Insurance Company showed that there has been a marked decrease throughout the United States in the mortality rate of children from the age of one month to twelve months, but that only slight gain has been made in the mortality rate of infants of one month or less of age.

To summarize then, Holland has cause to be proud of its maternal death rate—only six out of 3,181 births over a period of ten years. The infant mortality rate is very good up to the year 1928, from which point it has been steadily climbing for no apparent reason. This needs careful thought on the part of our Board of Health and the medical profession. One would also like to call attention to our falling birth rate, which will probably be rectified by better economic conditions. Finally, the Holland Hospital gives the best of care to its obstetrical cases and only the most unreasonable of critics would blame it for deaths resulting from the most serious complications of childbirth that confront the physicians.

POST GRADUATE WORK

The following enrolled for the post graduate course in ophthalmology and otolaryngology given in Ann Arbor April 23, 28, 1934, under the auspices of the Department of Post Graduate Medicine and the State Society:

OPTHALMOLOGY AND OTOLARYNGOLOGY

Dr. Gordon H. Bahlman, 400 Sherman Bldg., Flint, Mich.—Ophthalmology.  
 Dr. Clarence Baker, 22128 Grand River, Detroit, Mich.—Ophthalmology and Otolaryngology.  
 Dr. C. S. Ballard, 14320 E. Jefferson Ave., Detroit, Mich.—Ophthalmology and Otolaryngology.  
 Dr. Arthur D. Beam, Receiving Hospital, Detroit, Mich.—Ophthalmology and Otolaryngology.  
 Dr. Walter J. Bien, Coldwater, Mich.—Otolaryngology.  
 Dr. George M. Blackburn, 214 Fountain St., Grand Rapids, Mich.—Otolaryngology.  
 Dr. Earl Bloomer, 1009 S. Mason St., Dearborn, Mich.—Ophthalmology.  
 Dr. F. J. Cady, 126 S. Jefferson Ave., Saginaw, Mich.—Ophthalmology.  
 Dr. L. F. Carter, David Whitney Bldg., Detroit, Mich.—Ophthalmology and Otolaryngology.  
 Dr. J. V. Cassady, Associates Bldg., South Bend, Ind.—Ophthalmology and Otolaryngology.  
 Dr. Wm. S. Conway, 314½ Howard St., Petoskey, Mich.—Ophthalmology.  
 Dr. A. J. Cortopassi, Second Natl. Bank Bldg., Saginaw, Mich.—Otolaryngology.  
 Dr. Robert H. Criswell, 707 Washington Ave., Bay City, Mich.—Ophthalmology and Otolaryngology.  
 Dr. Paul C. Cusick, W. J. Seymour Hospital, Eloise, Mich.—Ophthalmology and Otolaryngology.  
 Dr. Alfred Dean, 308 Medical Arts Bldg., Grand Rapids, Mich.—Ophthalmology and Otolaryngology.  
 Dr. G. F. Denyes, 316 Michigan St., Toledo, Ohio—Ophthalmology and Otolaryngology.  
 Dr. Ralph G. Ferris, Birmingham, Mich.—Otolaryngology.  
 Dr. P. T. Grant, 420 Medical Arts Bldg., Grand Rapids, Mich.—Ophthalmology.  
 Dr. L. O. Grant, 420 Medical Arts Bldg., Grand Rapids, Mich.—Otolaryngology.  
 Dr. George C. Hardie, 290 Michigan Ave. W., Jackson, Mich.—Ophthalmology and Otolaryngology.  
 Dr. G. O. Hedlund, 28 Johnson Bldg., Painesville, Ohio—Ophthalmology and Otolaryngology.  
 Dr. Dewey R. Heetderks, 400 Medical Arts Bldg., Grand Rapids, Mich.—Otolaryngology.  
 Dr. D. P. Hornbogen, Savings Bank Bldg., Marquette, Mich.—Ophthalmology and Otolaryngology.  
 Dr. Don M. Howell, Alma, Mich.—Ophthalmology.  
 Dr. W. S. Jones, Menominee, Mich.—Ophthalmology and Otolaryngology.  
 Dr. Thos. F. Keating, 5057 Woodward Ave., Detroit, Mich.—Ophthalmology and Otolaryngology.  
 Dr. Mana Kessler, Shearer Office Bldg., Saginaw, Mich.—Ophthalmology and Otolaryngology.  
 Dr. George C. Kreutz, Henry Ford Hospital, Detroit, Mich.—Otolaryngology.  
 Dr. Hugh A. Kuhn, First Trust Bldg., Hammond, Ind.—Ophthalmology and Otolaryngology.  
 Dr. V. R. Lapp, 250 Main St., Hamilton, Ont.—Otolaryngology.  
 Dr. B. E. Leatherman, 303 The Colton, Toledo, Ohio—Ophthalmology.  
 Dr. Louis S. Leo, Masonic Bldg., Houghton, Mich.—Ophthalmology and Otolaryngology.  
 Dr. Lee A. Lewis, Manistee, Mich.—Ophthalmology and Otolaryngology.  
 Dr. P. R. Lieberthal, 104 S. Suffolk St., Ironwood, Mich.—Ophthalmology and Otolaryngology.  
 Dr. John A. Lukens, 316 Michigan St., Toledo, Ohio—Ophthalmology and Otolaryngology.  
 Dr. Fred W. McAfee, 5050 Joy Road, Detroit, Mich.—Ophthalmology and Otolaryngology.

Dr. J. J. McDermott, 182 Niles Ave., St. Joseph, Mich.—Otolaryngology.  
 Dr. A. R. McKinney, Second Natl. Bank Bldg., Saginaw, Mich.—Ophthalmology.  
 Dr. A. M. Moll, 961 Lakeside Drive, Grand Rapids, Mich.—Otolaryngology.  
 Dr. Leonard Nippe, 316 Michigan St., Toledo, Ohio—Ophthalmology and Otolaryngology.  
 Dr. James T. O'Hora, General Motors Bldg., Detroit, Mich.—Otolaryngology.  
 Dr. Ralph H. Pino, David Whitney Bldg., Detroit, Mich.—Ophthalmology.  
 Dr. Paul Rabkinowitz, Mountain Sanatorium, Hamilton, Ont.—Otolaryngology.  
 Dr. Aaron D. Riker, 1012 Riker Bldg., Pontiac, Mich.—Ophthalmology.  
 Dr. C. E. Savery, 105 E. Jefferson Blvd., South Bend, Ind.—Ophthalmology and Otolaryngology.  
 Dr. R. N. Sherman, 720 Washington Ave., Bay City, Mich.—Ophthalmology and Otolaryngology.  
 Dr. E. E. Sink, 725 N. University, Ann Arbor, Mich.—Ophthalmology.  
 Dr. Walter K. Slack, 308 Eddy Bldg., Saginaw, Mich.—Otolaryngology.  
 Dr. William G. Symon, Garrett, Ind.—Ophthalmology and Otolaryngology.  
 Dr. Thomas L. Tolan, 324 E. Wisconsin Ave., Milwaukee, Wis.—Otolaryngology.  
 Dr. Stanley H. Vegors, 313 Ashmun St., Sault Ste. Marie, Mich.—Ophthalmology and Otolaryngology.  
 Dr. H. O. Westervelt, 239 Pipestone St., Benton Harbor, Mich.—Ophthalmology and Otolaryngology.  
 Dr. H. T. White, 430 S. Saginaw St., Flint, Mich.—Ophthalmology.  
 Dr. Elmer L. Whitney, 18224 Wildemere, Detroit, Mich.—Ophthalmology.  
 Dr. Arthur P. Wilkinson, 664 Fisher Bldg., Detroit, Mich.—Ophthalmology and Otolaryngology.  
 Dr. B. Palmer Woodson, Temple, Texas—Ophthalmology and Otolaryngology.

## COUNTY SOCIETIES

### EATON COUNTY

The regular monthly meeting of the Society was held Thursday, April 26, at the Carnes-Tavern Hotel, Charlotte. Following a dinner, the meeting was called to order by the president, Dr. Clyde McLaughlin. Dr. A. G. Sheets, delegate, gave a report of the delegates' meeting in Flint and summarized the plan discussed by them. It was moved by Dr. James Bradley and carried unanimously that the report be accepted.

The president asked a rising vote of sympathy for the members of the society now having medico-legal cases.

A very instructive paper with lantern slides, "Cutaneous Manifestations of Syphilis," was given by Dr. Arthur R. Woodburn of Grand Rapids. Following an interesting discussion the meeting was adjourned.

The regular April meeting was held on the 26th at the Carnes Tavern Hotel, Charlotte, where dinner was served to fifteen members of the Society.

President McLaughlin presided and introduced the guest of the evening, Dr. A. R. Woodburne. Dr. Woodburne's address was on "The Cutaneous Manifestations of Syphilis" and was very instructive. An interesting discussion followed. The meeting was adjourned.

A special meeting of the Eaton County Medical Society was called for May 14. Dinner was served to twenty-one members and sixteen guests from five nearby counties.

President McLaughlin presided at a brief business meeting. The members and guests were reminded of the Post-Graduate opportunities as outlined in the May issue of the State JOURNAL and urged by the secretary to read the Mutual Health Service plan as outlined at Flint.

The president then introduced the speaker of the

evening, Dr. Andrew B. Rivers of the Mayo Clinic, Rochester, Minnesota, who has been a guest for a few days of Dr. K. A. Anderson of Charlotte. Dr. Rivers gave a very comprehensive paper on the "Etiology and Treatment of Peptic Ulcer."

According to Dr. Rivers, who has made an intensive study of his subject, statistically, experimentally and clinically, there are three causative factors: (1) the local tissue trauma factor produced by such chronic irritations to the mucous membrane as coarse foods and chronic infectious foci; (2) the acid pepsin-tissue defense factor, without acid chronic peptic ulcer won't occur"; (3) the systemic or nemogenic factor. Dr. Rivers states that the periods of activity of ulcers coincide with periods of worry, depression, and fatigue and that periods of relaxation are unusual among chronic peptic ulcer victims. His statistics show that there are thirty-eight times as many peptic ulcers among the physicians of the Mayo Clinic as there are among the average southern negroes.

The therapeutic suggestions are directed toward eradication of the etiological factors; systemic investigation; period of observation; elimination of foci of infection from tonsils, teeth, sinuses, appendix and gall bladder; vaccines (autogenous, if possible), foreign proteins; elimination of foreign bodies and diaphragmatic hernia.

A discussion followed and Dr. Rivers was given a rising vote of thanks for the excellent presentation of his subject. The meeting was adjourned.

J. LAWTHER, Secretary.

### MONROE COUNTY

Dr. H. H. Cummings, Ann Arbor, councillor of the district, was the guest of Monroe County Medical Society, April 19, 1934, at its dinner meeting at the Park Hotel. There was a large attendance to greet him. Dr. Cummings spoke on "Gynecology and the General Practitioner."

A large group from Monroe County attended the District Post-Graduate Conference in Adrian, May 10. It was a very pleasant and profitable meeting.

FLORENCE AMES, Secretary.

### LIVINGSTON COUNTY

Following the usual Sanatorium dinner at 7:00 p. m. a brief business session was called to order by the president. There were in attendance eighteen members and guests, including representatives of the Livingston County Dental Society.

The minutes of the April meeting were presented and approved as read. No action was taken on any matter of importance but a general discussion followed a report of Dr. Hollis Sigler, who acted as alternate at the recent special meeting of the House of Delegates held in Flint in April. While no resolutions on this subject were passed, the consensus of opinion of our members was that the acknowledgement of the principle of medical insurance by the House of Delegates might prove to be an unfortunate step at this time. It was felt that mutual insurance is not the answer to the economic problem and that in the end either private insurance companies or some form of politically-made state insurance would eventually consume it. The fact was recognized that the plan presented at Flint was a form of contract practice and was characterized in part by certain shortcomings that would be very hard to remedy.

The secretary again announced a Post-Graduate Conference of the 14th Counselor District to be held at Adrian, May 10, and the program was read.

Following the business session we were delighted with an illustrated presentation by Dr. Claire Straith, of Detroit, on "The Plastic Repair of Deformities and Injuries to the Face, with Particular

Reference to Those Caused by Automobile Accidents." The various members were one in the opinion that the plastic surgeon of today has achieved an enviable goal in his specialty. Doctor Straith has our whole-hearted thanks for his remarkable presentation.

R. S. ANDERSON, M.D., *Secretary.*

### ST. CLAIR COUNTY

A regular meeting of the Society was held at the Harrington Hotel, Port Huron, Michigan, Tuesday, April 17, 1934. Supper was served to four guests and nineteen members and before the program began twenty-eight were present.

The meeting was called to order by the president, Dr. A. B. Armsbury. The minutes of the preceding meeting were read and approved. The special committee consisting of Doctors Burley and Brush, appointed at the last meeting to interview the management of the Harrington Hotel, made a report. Upon a motion by Doctor Heavenrich, supported by Doctor DeGurze, Dr. M. E. Vroman, a former member of our society for many years, was reinstated by a vote of the Society. The censors reported favorably upon the application of Dr. Wilbur S. Henderson and upon a motion acted upon in the affirmative the secretary was instructed to cast a ballot electing him to active membership.

Doctor Brush introduced the guest of the evening, Dr. A. E. Catherwood of Detroit, who addressed the Society upon the subject, "Bleeding in the Last Trimester." Doctor Catherwood confined himself largely to two conditions: premature separation of the placenta and placenta previa, discussing the pathology, etiology, symptoms, diagnosis, differential diagnosis and treatment of the two conditions. Discussion was opened by Dr. D. J. McColl, followed by Doctors Cooper and Brush, after which Doctor Catherwood closed the discussion. In conclusion the president thanked the speaker for his address and the Society gave him a rising vote of thanks. Meeting adjourned at 9:15 p. m.

A regular meeting of the Society was held at the Harrington Hotel, Port Huron, Michigan, Tuesday, May 1, 1934.

Supper was served to thirty guests and members and before the program began at least thirty-five were present.

At the request of the president, Dr. A. B. Armsbury, T. E. DeGurze of Marine City introduced Dr. Angus McLean with a brief but complimentary tribute to his professional attainment, his splendid character and his fatherly association with so many of the active physicians of the day in this section of the state. Doctor McLean made an impromptu address in which he discussed the early history and accomplishments of the profession, called to mind many incidents of the past forty years in his professional experience in and about Detroit and gave those present the benefit of some very splendid advice with regard to the future of the medical profession. The president then called upon Doctors Waters, Heavenrich, McKenzie, Cooper, DeGurze, Pollock and Robb in the order named, who continued in reminiscence and in compliment to Doctor McLean. During the address of Doctor McLean as well as throughout the talks which followed one had only to observe the faces of those present to realize the enjoyment experienced as all listened to their former teacher and their present friend and counselor. Doctor McLean closed the evening program in the usual manner and was given a rising vote of thanks by the Society. Meeting adjourned at 9:30 p. m.

The last regular meeting of the Society for the spring season was held at the Harrington Hotel, Port Huron, Tuesday, May 15, 1934. Supper was served to thirty-one members and guests at 6 p. m., and at the time President Armsbury called the meeting to order seven guests and thirty members were present. The minutes of the preceding meeting were read and approved.

Several communications were read. Doctor Best of Lapeer invited the members of Saint Clair County Society to attend the testimonial dinner in honor of Doctor Tinker of Lapeer to be given on May 24. Doctor Heavenrich read an invitation to former internes of Harper Hospital to attend an organizational dinner at Detroit on May 24 at which time an alumni association is to be formed.

The president requested Doctor Heavenrich to introduce the guest of the evening, Doctor Frederick C. Kidner, and Doctor Heavenrich did so in a few well chosen words. Doctor Kidner's talk on the treatment of the more common fractures was illustrated by lantern slides. The speaker stressed the importance of correct early care and the desirability of referring most fractures to someone who was giving special attention to fractures. He also emphasized the fact that fractures giving rise to pain after reduction and splinting were not in correct position and must needs be retreated at once to avoid bad result. In the opinion of Doctor Kidner 95 per cent of all femur fractures may be successfully treated on Balkan frame or Thomas splint. Volkman's paralysis was dwelt upon at some length and care advised in treatment of fracture about the elbow. Discussion by Doctors Sites, MacKenzie, Patterson, Heavenrich, Attridge, Brush, Carney, Boughner, Armsbury and Smith.

The meeting adjourned, after a rising vote of thanks, at 10 p. m.

GEORGE M. KESL, *Secretary-Treasurer.*

### TUSCOLA COUNTY

The regular meeting of the Tuscola County Medical Society was held at the Hotel Montague, Caro, Michigan, April 19, 1934. The meeting was attended by members of the allied professions of medicine, dentistry, and pharmacy of Tuscola County. A dinner was served at 6:45 P. M.

#### Outline of Program:

A ten minute discussion by a member of each group.

A round table discussion limited to three minutes each.

Talking pictures on preparation and use of insulin, presented by Eli Lilly Company.

Dr. O. G. Johnson, of Mayville, president of the Medical Society, conducted the meeting. He gave a short introductory address of welcome to the druggists and pharmacists, and an outline of the purpose of the meeting.

Mr. George Moore, pharmacist of Caro, gave an interesting discussion of the history of pharmacy and its relation to the healing art.

Dr. George H. Steele, dentist at Vassar, presented a ten minute discussion of the professions, their inter-relations, their public relations, and political economy.

It was the expressed opinion that a political group consisting of doctors, dentists and druggists would be a strong political factor in the community. It was agreed that the three groups had logical common grounds for such an organization. It was agreed that such a group should be non-partisan. It was suggested that we utilize the political strength of the combined groups to prevent destructive governmental interference.

Next, followed an hour of round-table discussion.

It was proposed that a permanent organization of the three groups be formed. That meetings be held at various times. That a liaison group, consisting of the secretaries of the three county societies be made, as a permanent committee. That the purpose of the organization is to be entirely political and non-partisan. That all the members are urged to examine carefully all political movements, local, state and national, and report to their committee. Meetings will be called at the discretion of the committee to take definite stands upon political questions which seem of importance to any or all of the groups.

The committee for liaison among the three groups was named as follows: Dr. L. L. Savage, Caro, Michigan, Medical Society; Dr. Schenk, Cass City, Dental Society; Mr. Carl Palmer, Caro, County Druggists.

### WAYNE COUNTY

The Medical Service Bureau of the Wayne County Medical Society, created to bring complete medical care to employed persons of small means, including their families, has started to function, with experimental work. Two hundred seventy-seven patients have been served by the Bureau, to May 10, 1934. The patients receive medical and hospital attention at the time when required and make arrangements with the Medical Service Bureau for the payment of their coördinated bills. In all cases, satisfaction has been expressed by the patients (gratitude would be a better word), as well as by the physicians who handled the cases, the hospitals, and the employers. The Bureau presents a plan to each employee so that coördinated bills are liquidated over a maximum of fifty-two weeks. Due to co-operation and enthusiasm from the industrialists, arrangements for regular and certain payment of these bills have been satisfactorily made.

The Medical Service Bureau is a busy department of the Wayne County Medical Society and eliminates the hazard of postponed necessary medical care. It helps the people; it helps the medical man.

\* \* \*

The Federal government, through the Wayne County Emergency Relief Commission, has given proof of its confidence in the Wayne County Medical Society by inaugurating its Medical-Dental Bureau in the W. C. M. S. Building with Health Service Coördinator Wm. J. Burns in charge. The Bureau is the clearing house for home and office medical care of unemployed welfare sick. It employs twenty-three assistants and has a ten trunk line switchboard in the W. C. M. S. building. It maintains twenty-four hour service, Sundays and holidays, included. The work of the Bureau is running smoothly; the profession is helping to run its own business.

The Cafe of the Wayne County Medical Society will continue to serve luncheons to members and their guests during the summer period. Luncheon is served from 11:30 a. m. to 2:30 p. m. daily, except Sunday. The Cafe offers tempting well-cooked food, served nicely, in beautiful surroundings, at surprisingly reasonable prices. You are invited to drop in at 4421 Woodward at Canfield, Detroit, and enjoy the W. C. M. S. Cafe and club rooms and meet some of your old friends the next time you are in Detroit.

Detroit will be represented by some one hundred fifty physicians at the Annual Meeting of the A. M. A. in Cleveland the week of June 11th.

The American Medical Golfing Association Tournament at Mayfield Country Club will start the week, on Monday, June 11. Write Bill Burns, 4421

Woodward Avenue, Detroit, for an application blank, and join the boys at Mayfield for a great party.

W. J. BURNS, *Executive Secretary.*

### WOMAN'S AUXILIARY, MICHIGAN STATE MEDICAL SOCIETY

MRS. ELMER L. WHITNEY, President  
18224 Wildemere Ave., Detroit

MRS. C. L. STRAITH, Secretary-Treasurer  
19305 Berkley Road, Detroit

Mrs. James Blake, president of the Woman's Auxiliary to the American Medical Association, has just returned from a visit to Cleveland where she went over the plans for the annual meeting with the Cleveland women. A very capable group of doctors' wives, under the able supervision of Mrs. Clyde L. Cummer, has charge of the social affairs for the convention. The tentative program of entertainment follows:

Monday, June 11—

Luncheon of Auxiliary Board at the Hotel Carter.  
Dinner in honor of Past President and Board at Hotel Carter.  
Mrs. Alfred Maschke, Chairman.

Tuesday, June 12—

Luncheon, Bridge and Style Show, Lake Shore Hotel.  
Mrs. Oliver A. Weber, Chairman.

Wednesday, June 13—

Auxiliary Luncheon at the Hotel Carter.  
Mrs. Russell H. Birge, Chairman.

Thursday, June 14—

Luncheon at Country Club, Sightseeing Tour.  
Mrs. James R. Driver, Chairman.  
"Bring-Your-Husband Dinner"—Hotel Carter.

Friday, June 15—

Women's Golf Tournament, Wentwood Country Club.  
Mrs. E. D. Saunders, Chairman.

Along with this splendid social program, which is entirely in the hands of the wives of the Cleveland members of the American Medical Association, will go a program of business planned and directed by the Auxiliary. The reports to be heard and the business to be transacted this year are of such import that the meeting cannot help being of exceptional interest to every Auxiliary member. Decide to be with us in Cleveland from June 11 to 16.

*Bay County:* The Woman's Auxiliary to the Bay County Medical Society were delightfully entertained at the home of Mrs. M. R. Slattery, 909 N. Lincoln Ave., Bay City, on April 11th. Following the buffet supper, which was served to twenty-five guests, Mrs. Slattery showed moving pictures of the Bay City doctors, which Dr. Slattery had taken during the past few years. Later bridge was played.

(MRS. E. C.) JOSEPHINE S. MILLER,  
Publicity Chairman.

*Saginaw County:* Twenty-four members of the Auxiliary to the Saginaw County Medical Society met for a luncheon and bridge party Friday, April 20, at the Robinson tea rooms. The regular business session of the auxiliary also was conducted, Mrs. J. A. McLandress, president, presiding. Prizes at contract went to Mrs. L. C. Harvie and Mrs. Richard Ryan, while high scores at auction were held by Mrs. Henry J. Meyer and Mrs. Frank Ostrander, of Freeland. Mrs. J. Orton Goodsell, Jr., received the house prize. Mrs. Robert Jaenichen was chairman of the day.

(MRS. ROBT.) DOROTHY JAENICHEN,  
Publicity Chairman.

*Wayne County:* On Tuesday, April 10, the third and last Public Relations meeting of the season was

held at the Metropolitan Methodist Church. Invitations were sent to all the Mothers Clubs of the Y. M. C. A., the Parent-Teachers' Association, and the various churches and health organizations in the city.

Mr. Wm. J. Burns, executive secretary of the Wayne County Medical Society, acted as toastmaster at the luncheon which opened the meeting, and those who brought salutations included Dr. M. S. Rice, pastor of the Metropolitan Methodist Church; Dr. Alexander W. Blain, President of the Wayne County Medical Society; Mrs. Claire L. Straith, President of the Auxiliary; Mrs. James Blake, President of the Auxiliary to the American Medical Association; Dr. Fred M. Meador, Medical Director of the Department of Health; Dr. A. O. Brown, member of the Advisory Committee of the County Medical Auxiliary; Dr. Wm. J. Stapleton, Jr., Director of the Speakers' Bureau of the County Medical Society; Miss Mable L. McNeil, President of the Michigan State Nurses Association; Miss Emily Sargent, Director of the Visiting Nurses Association; and Miss Grace Ross, Superintendent of Nursing of the Department of Health.

After the luncheon the gathering adjourned to the auditorium to hear the speaker of the day, W. W. Bauer, M.D., of Chicago, Director of the Bureau of Health and Public Instruction of the American Medical Association.

Mrs. Harold F. Sawyer read the poems "The Doctor" and "The Doctor's Wife," by Flora Wells Moon; and Mrs. Frank W. Hartman, vice-president and program chairman of the Auxiliary, introduced the speaker.

Dr. Bauer chose as his subject, "Popular Beliefs That Are Not So," which included information about prenatal care and childbirth, communicable diseases, cosmetics, medical fallacies and food foolishness.

In speaking of prenatal care and childbirth Dr. Bauer said that the adage that "the mother must eat for two" is true in quality, but not in quantity. The old saying "a tooth for every child" is not necessary nowadays, for if the mother will eat foods rich in minerals she will protect her own teeth as well as assure strong teeth for her child. The superstitious idea that a premature baby of eight months is not as likely to live as one of seven months is foolish. In fact, the eight months baby should be stronger than the younger one.

Regarding communicable diseases, Dr. Bauer said that contrary to general opinion, they are more contagious at the beginning than at the end of the illness. It is in the beginning that the sick should be isolated. Also, the old belief that "a child should have communicable diseases as early as possible and get them over" is very wrong—every case of a mild contagious disease is a potential death. Some people believe that there is something akin to magic in chemical disinfectants. The important protection is an earnest application of spring housecleaning. A chemical disinfectant is a trimming, which may be used if liked. Unless the room is first well cleaned, fumigators will do no good. They are a sacrifice on the altar of ignorance—and a bad odor. The idea that one can have a contagious disease only once is not correct, but repetition is uncommon. Disease is communicated mainly by those infected because the infection is carried in the secretions of the nose and throat.

Concerning cosmetics Dr. Bauer said that personal appearance often means a great deal mentally. Some of the modern advertisements, such as the one about halitosis, cause a great deal of worry to overly sensitive people who imagine that they are subjects of the affliction described. It is not true that certain creams cause hair to grow where it would not otherwise. All forms of hair removers or depilatories are dangerous and unsatisfactory. The only permanent way of removing hair is with the electric needle, but this leaves small scars, is painful, and must be done by an expert. Regarding the growing of hair, Dr. Bauer says that some baldness is caused from scalp infections, and can be prevented if the cause is removed. Tonics are no good where a man's forehead grows more intellectual as time goes on. The only thing he can do is to be proud of it, wear a wig or wear a skull cap. There is no such thing as a wrinkle remover. Freckles are deeper than the skin and cannot be removed without first removing the skin.

In connection with medical fallacies, Dr. Bauer spoke especially about the dangerous drugs people are using in an effort to regulate their weight. The unwise use of thyroid tablets often proves fatal, though something can be done if a physician is consulted in time. But, there is a new

drug on the market (dinitrol phenol), which people must be warned against. It will reduce and it will also kill. When too much of this drug has been taken there is nothing that can save its victim. Taking it is literally playing with explosives and flirting with death.

Dr. Bauer said that there is a tremendous amount of foolishness peddled about food and diet. Our slogan might well be "Vitamin Hungry America." In magazines we see pictures of European doctors side by side with American intestines. We are advised to take cough drops for vitamin A, when we can get all we need by eating eggs, butter and green vegetables. Vitamin B is found in yeast and the wheat germ. The food in modern prisons supplies sufficient vitamin C for a normal diet. Vitamin D is the vitamin found in sunshine and cod liver oil and which we meet in the form of concentrates. Vitamin G is the last of the list now known, and northerners don't need to worry about it. The wise thing to do is to eat a good rounded, sensible diet and forget all about food fads.

Approximately three hundred people heard Dr. Bauer's talk and the many inquiries during the question period which followed indicated the interest and thought which his subject had aroused. It should be added that he not only spoke most instructively but very entertainingly as well.

Mrs. James Blake, president of the Auxiliary to the American Medical Association, was an unexpected and most welcome guest on this occasion. She gave a very interesting and inspiring talk at the regular business meeting which followed Dr. Bauer's speech. She said that doctors' wives could be of most help to their husbands by broadening their own viewpoint. They should get over their lopsided way of thinking by reading magazines and attending lectures presenting the other side of the question. In this way they can prepare themselves to answer the questions of the laity and be real medical informants. She also said that May Day is Health Day and its celebration should belong to the auxiliaries of the medical societies.

One of the most important meetings on the calendar of the Woman's Auxiliary was the annual meeting. This took place on Tuesday, May 8.

The yearly reports were read and officers for the coming year elected. The results of the election were, as follows: President, Mrs. Frank W. Hartman; first vice president, Mrs. J. H. Dempster; second vice president, Mrs. L. O. Geib; third vice president, Mrs. Frederick C. Kidner; recording secretary, Mrs. H. J. Hammond; treasurer, Mrs. Roger V. Walker; corresponding secretary, Mrs. Harry W. Plaggemeyer; financial secretary, Mrs. H. F. Sawyer; custodian, Mrs. Wm. E. Blodgett.

Delegates to the State Convention: Mrs. Claire L. Straith, Mrs. S. W. Plaggemeyer, Mrs. J. Milton Robb, Mrs. Jas. H. Dempster, Mrs. Gerald A. Wilson, Mrs. Frank W. Hartman.

Alternates: Mrs. H. Wellington Yates, Mrs. Basil L. Connelly, Mrs. Clifford B. Loranger, Mrs. Allan W. McDonald, Mrs. Clarence I. Owen, Mrs. Chas. J. Barone.

Through the courtesy of the United Concert Artists' Management, Clarice Stambaugh, dramatic soprano, accompanied by Melvin Zeidler at the piano, presented a group of soprano solos.

Mrs. J. H. Dempster and Mrs. Edwin S. Sherrill presided at the tea table and Mrs. Louis J. Morand, Mrs. George M. Denis and Mrs. A. S. Whittaker were hostesses for the day. Tea and a What-Not and Bake Sale completed the program.

A Spring Card Party was given by the Ways and Means Committee of the Auxiliary at the club house on Wednesday, May 16. This formed a climax to the neighborhood bridge groups which met during the year. The two members from each group having highest total scores were invited to play as a team in a tournament composed of similar teams from all the groups, and extra prizes were awarded to the winners. The party was limited to fifty tables. All members of the neighborhood bridge clubs and their friends were invited. There were table prizes,

door prizes and refreshments. During the afternoon Mrs. V. P. Moisides presented a delightful group of piano solos.

(MRS. CLIFFORD) LORRAINE E. LORANGER,  
*Publicity Chairman.*

**MICHIGAN'S DEPARTMENT  
OF HEALTH**

C. C. SLEMONS, M.D., Dr.P.H., Commissioner  
LANSING, MICHIGAN

**SCARLET FEVER INCIDENCE HIGH**

From time to time we have called attention to the high incidence of scarlet fever. Perhaps few physicians realize just how prevalent the disease has been during the last year or two. A brief review of some statistics in this connection will help.

The calendar year 1933 closed with 16,269 cases reported for the state. This was the highest number for any year in the records of the department covering the period since 1900. It was approximately 30 per cent greater than the mean for the last five year period. Scarlet fever behaves quite regularly according to season. In Michigan the incidence reaches a low ebb about August or the first of September and from that point climbs slowly but with increasing rapidity until it reaches a high mark during December or January. From then it usually continues on a level of a high plateau until some time in April or May, after which it declines rather rapidly.

We believe it of interest to study the incidence in some of the cities for the first four months of 1933. For this period there were reported in the state as a whole 190 cases per 100,000 population. Below is a table of the larger cities having rates higher than that of the state as a whole:

City	Rate per 100,000 population	Cases
Flint	799	1145
Muskegon	708	348
Kalamazoo	580	293
Jackson	471	230
Owosso	428	62
Niles	344	29
Lansing	315	218
Muskegon Heights	276	41
Ishpeming	271	17
Marquette	250	30
Ann Arbor	249	63
Pontiac	236	131
Grand Rapids	221	333

In general, it may be said that rural communities surrounding these cities have rates somewhat comparable. Usually the rural rate is a little lower. It is of interest to note that counties having full-time county health departments generally have a very much higher rate than other rural districts. This is unquestionably due to a more complete reporting that comes with better organization.

The high incidence of scarlet fever in Flint and vicinity began early in the season and has been continuous. There was a total of 1,251 cases reported for the first four months of the year. There was apparently little indication of a decline at the end of April. The same thing may be said regarding Muskegon except that perhaps there was a little more indication of decline. Jackson and Grand Rapids had a relatively low incidence until late in the season but increased rapidly during March and April. Pontiac's incidence has also increased considerably during the latter part of the period in question.

Battle Creek, Saginaw and Bay City are all below the state rate, there being only four cases reported in Bay City for the four months. Detroit, with 137

per 100,000 for the period in question, is also below the state rate. There have been a number of scattered areas in rural districts in the Upper Peninsula, particularly in the western part, with a quite high rate. Charlevoix and Alpena have also recently been rather high.

There are no figures available concerning the case fatality rate for this period. It is known that a great majority of the cases are quite mild. There was, however, a 40 per cent increase in the number of deaths for the calendar year 1933 as compared to 1932. The great number of cases with symptoms exceedingly slight and atypical continues to make the problem of control a very complicated one. In many of these cases no physician is called.

C. D. B.

**A NEW COUNTY HEALTH UNIT**

The establishment of another full-time county health department has been made possible by the W. K. Kellogg Foundation. The fortunate county is Van Buren. By vote of the county board of supervisors the offer of the Foundation to provide most of the funds for such a unit was accepted. The state will contribute the usual \$3,000 per year subsidy, and the county will provide office space and furnishings. It is expected that the unit will be ready to start on July 1. The personnel has not as yet been announced.

**VIOLATING VENEREAL DISEASE QUARANTINE  
BRINGS IMPRISONMENT**

Two women, pleading guilty to violating quarantine for venereal disease, were sentenced on April 16 to one year in the Detroit House of Correction by Circuit Judge Collingwood of Lansing.

Complaint was made to the Michigan Department of Health by the sheriff of Ingham County, referred by the Lansing Welfare Department. The two women, who were reported to be running a house of prostitution in a village near Lansing, had been examined by the health officer and quarantined for venereal disease. They had been instructed by him not to leave the premises except to come to his office for treatment, with transportation furnished by the welfare department. Disregard of this order brought the matter to the attention of the sheriff. On the advice of the law enforcement officer of the Michigan Department of Health, the sheriff signed a complaint against the women for breaking quarantine.

The charge was violation of Public Act 17758, which made it a Circuit Court misdemeanor. The women plead guilty and were sentenced by Judge Collingwood to a state reformatory for one year, which automatically meant to the Detroit House of Correction.

**JACKSON LOSES IN COURT ACTION**

Damages of \$750 against the city of Jackson for pollution of the Grand River with sewage have been awarded to a Rives Township farmer by Circuit Judge James S. Parker. A court order was also issued requiring that the city take steps to alleviate "the intolerable conditions" within 90 days. About seventy similar suits have been awaiting the outcome of this case.

Bond issues for a sewage disposal plant have been rejected repeatedly by Jackson voters, and a request for a P.W.A. grant for this purpose has been pending for several months. The city will attempt to secure immediate action on the federal grant and, failing that, will submit another bond issue to the people.

The city attorney of Jackson has announced that the case will be appealed to the Supreme Court.

## OBITUARY

## DR. EDGAR V. BEARDSLEE

Dr. Edgar V. Beardslee of Highland Park, Michigan, died May 10 at the Highland Park General Hospital. He was born in Pontiac forty-nine years ago. His early education was obtained at the Ferris Institute at Big Rapids and the Ann Arbor High School after which he entered the University of Michigan where he received his medical degree in 1916. In 1917 he began practice in Highland Park. Dr. Beardslee was elected commissioner in Highland Park a year ago largely through the influence of the medical profession of the city. He was a competent accountant and took over the position of finance commissioner. Dr. Beardslee was a member of Highland Park Lodge, No. 468, F. & A. M., and Highland Park Commandery, Knights Templar. He was president of the Highland Park Physicians' Club and a member of the Wayne County and State Medical Societies. He was also a member of the Detroit Golf Club. Surviving are the widow; a daughter, Betty Jane; his father and a brother, Oliver, both of Pontiac.

## DR. ROBERT Y. FERGUSON

Dr. Robert Y. Ferguson of Pontiac died on March the twentieth. Dr. Ferguson was born in Hensall, Ontario, and was educated in the Canadian Public and High schools. He graduated from the Detroit College of Medicine in 1896 and began the practice of medicine in Caledonia, Minnesota. He returned to Michigan two years later and located in Pontiac, where he practiced medicine and surgery up to the time of his death. Dr. Ferguson joined the Oakland County Medical Society shortly after locating in Pontiac. His keen interest in medical affairs is seen in his election as President of the Oakland County Medical Society. Dr. Ferguson was popular not only as a citizen but was beloved by all members of the medical profession that knew him.

## DR. IGNATZ MAYER

Dr. Ignatz Mayer of Detroit died, April 26, 1934, after an illness of five days. He was born in Vienna in 1860. He received his academic training at St. Joseph's College, Budapest, where he obtained the A.B. degree. He migrated to the United States at the age of twenty, having secured a position as a writer for a German newspaper in New York. He eventually studied medicine at the Medico Chirurgical College, now part of the University of Pennsylvania. The past thirty-five years he had practiced medicine in Detroit. In 1899 he married Miss Nannette Phipps, who survives him. Dr. Mayer was fond of travelling and during his practice had made numerous voyages to European capitals and other post-graduate centers abroad. He was an accomplished linguist with fluent command of English, French, German, and Hungarian. He was a member of Wayne County Medical Society, Michigan State Medical Society, and the American Medical Society.

## CORRESPONDENCE

## FIRST APPLICATION

Battle Creek, Michigan  
April 25, 1934

Dear Dr. Warnshuis:

At a meeting of the Battle Creek Academy of Medicine and Dentistry held April 24, 1934, a resolution was adopted empowering me, as secretary of the organization, to request from the executive committee on Economics of the Michigan State Medical Society that Calhoun County be chosen as one of the first counties in which to carry out experimentation of the proposed plan of Medical Insurance.

We feel that our Academy, being the first organization of its kind formed for the express purpose of dealing with the economic phases of Medicine, is well equipped to carry out the proposed Health Insurance plan, both authoritatively and with the entire Medical and Dental professions working as a unit.

Very truly yours,  
H. C. HANSEN, *Secretary-Treasurer*,  
Battle Creek Academy of Medicine and Dentistry.

## BOARD EXAMINATIONS

Lansing, Michigan.  
May 4, 1934.

Dear Doctor Warnshuis:

Will you please see that the dates for the examinations of the Michigan State Board of Registration in Medicine are published in the JOURNAL as follows:

Ann Arbor, Michigan, June 5, 6 and 7, 1934.  
Detroit, Michigan, June 12, 13 and 14, 1934.

Thanking you, I am

Yours very truly,  
J. E. MCINTYRE, M.D., *Secretary*.

## ANNOUNCEMENT

The Gynecological Hospital Institute of Gynecologic Research of the University of Pennsylvania is conducting an intensive study of families into which congenitally malformed individuals have been born.

Special interest centers in families in which malformations have appeared in two or more children. Physicians who have knowledge of any such families are urged to communicate with:

DOUGLAS P. MURPHY, M.D.  
Gynecological Hospital Institute,  
University of Pennsylvania,  
Philadelphia, Pa.

## DINITROPHENOL

Grand Rapids, Michigan  
May 16, 1934

Dear Doctor Warnshuis:

In reply to your request for information concerning the use of alpha dinitrophenol I am sending the following report:

Seven obese patients, all women, were given the drug in the Kent County Relief Clinic. These patients varied in age from twenty-five to fifty. They were well except for their obesity. Two of them had previously taken thyroid extract and reported that they felt much better while taking dinitrophenol than during the period when thyroid was taken. They complained of some degree of palpitation and nervousness with thyroid extract which they did not have while taking dinitrophenol. Most of the patients in this group noticed excessive warmth for

some hours after taking the drug. You will observe that the usual dosage in this group was 5 grains a day given in one dose. At present we are giving smaller dosage, rarely giving more than 2 grains a day because of reactions reported by others. Most of the patients state that they feel better while taking the drug and this fact is evidenced in that they continued the use of it for rather long periods of time.

One mild urticarial reaction occurred in a patient not listed in this group and the drug was discontinued in her case. In Case 6 and in one other case not listed there was a failure to lose weight appreciably.

Case	Weight	Dose	Time	Weight Loss
1	156 lbs.	grs. 2 B.i.d.	11 weeks	23 lbs. (2 lbs. gain)
2	300+ lbs.	grs. 2 daily	10 weeks	28 lbs.
3	200 lbs.	grs. 5 daily	26 weeks	15 lbs.
4	315 lbs.	grs. 5 daily	10 weeks	44 lbs.
5	270 lbs.	grs. 5 daily	24 weeks	13 lbs.
6	293 lbs.	grs. 5 daily	15 weeks	0 lbs.
7	227½ lbs.	grs. 5 daily	6 weeks	8 weeks 15 lbs.

This group is too small and the cases were not under complete enough observation to be of any great scientific value. Metabolism tests were not done and the patients were not on standard diets. It is interesting to note, however, that we experienced only one minor skin reaction in ten cases on very large dosage. It is also interesting that most of the patients lost weight rapidly and felt better than they did without the drug.

We hope this brief report will be of some use to you in collecting information on this very interesting drug.

PAUL W. KNISKERN, M.D.  
Kent County Welfare Relief Commission.

## GENERAL NEWS AND ANNOUNCEMENTS

A district conference was held in West Branch May 23 and in Cadillac May 31, 1934.

Michigan should have a large registration at the A. M. A. meeting in Cleveland the week of June 10. Are you going?

The eighty-fifth annual session of the American Medical Association will be held in Cleveland, Ohio, June 11-15, 1934.

More than 500 requests have been received from out of state for copies of the May supplement, containing the plan for a Mutual Health Service.

Dr. George C. Chene of Detroit was tendered a testimonial dinner on May 3 by the staff of Providence Hospital in recognition of his twenty years of service as roentgenologist and secretary of the staff of the hospital.

Dr. H. A. Luce, Chairman of the House of Delegates of the Michigan State Medical Society, addressed the West Side Medical Society, Detroit, at their regular meeting on the evening of May 3. He discussed the deliberations of the House of Delegates at a special meeting held in Flint, also the report of the committee on economics.

Dr. J. B. Campbell of Big Rapids has been elected mayor of the city. Dr. Campbell has practiced in Big Rapids since 1900. He is also president of Kent County Medical Society. Dr. Campbell becomes mayor after four years as city commissioner. He is the fourth physician to occupy the mayor's chair.

An advisory committee of otologists was appointed April 25, 1934, by Dr. Frederick T. Munson, president of the Detroit Oto-Laryngological Society, upon request of the Detroit League for the Hard of Hearing, consisting of Dr. Don M. Campbell, Dr. B. R. Shurly, Dr. H. Lee Simpson, Dr. Howard W. Peirce and Dr. Neil Bentley.—*The Rainbow*.

The officers of the Northern Tri-State Medical Society for the year 1934-35 are as follows: President, Dr. H. E. Randall of Flint, Mich.; vice president, Dr. Edward P. Gillette, Toledo, Ohio; secretary, Dr. G. E. Jones, Lima, Ohio; treasurer, Dr. P. N. Sutherland, Angola, Indiana. The council consists of Dr. Charles Lukens, Toledo, Ohio; Dr. W. H. Marshall, Flint, Michigan, and Dr. G. O. Larson, LaPorte, Indiana. The next meeting will be held on April 10, 1935.

The Geographic Distribution of Peptic Ulcer by Hugo Muller, M.D., of Detroit, Michigan, is the title of an article which appears in the March number of the *American Journal of Surgery*. Dr. Muller, who is a member of the Wayne County Medical Society, is to be commended on the immense labor the preparation of this paper entailed. The statistics have been gleaned from countries as far apart as Mexico, Argentina, Africa, Syria, India, China, the Dutch East Indies, Australia and Europe.

## WASHTENAW ANNUAL MEETING

The annual joint meeting of the Washtenaw County Medical, Dental and Legal Societies was held at the Michigan Union at 6:30, May 8, 1934. Approximately one hundred persons were present. The Society had as its guests J. F. Warner and R. M. Burr, who are candidates for the State Legislature. Following the dinner an address was given by Honorable Herbert Orr of Caro, Michigan, a long time member of the State Senate. Mr. Orr spoke on general legislative trends. He deplored the excessive amount of legislation being demanded by organized minorities, who do not represent the will or the best interests of the majority. He regretted the surrender of representative government to the modern government by commissions, and finally exhorted every educated person to interest himself in his government and to repay the state for its investment in him by protecting it from the selfish exploitation by powerful minorities.

The following candidates were elected to membership. Frank Hartuff Bethell, Sherwood R. Russell, Thomas M. Durant, W. E. Schumacher.

## WAYNE COUNTY MEDICAL SOCIETY ELECTION

Dr. W. J. Cassidy, who was made president-elect a year ago, assumes office as president of the Society. Dr. R. C. Jamieson was elected to the office of president-elect. Dr. C. F. Brunk, secretary, Drs. A. W. Blain and Joseph Audries were elected as members of the Board of Trustees.

The election of the House of Delegates resulted as follows: *Delegates*—J. M. Robb, A. W. Blain, W. J. Cassidy, R. H. Pino, W. D. Barret, H. W. Yates, G. C. Penberthy, A. E. Catherwood, R. M. McKean, L. J. Hirschman, J. L. Chester, H. F. Dibble, C. F. Brunk, H. W. Plaggemeyer, George Kamperman, W. R. Clinton, L. J. Gariepy, S. A. Flaherty, A. P. Biddle, D. I. Sugar, S. W. Isley, L. O. Geib, E. D. Spalding, L. T. Henderson, H. A. Luce.

*Alternates*—E. C. Baumgarten, C. K. Hasley, B. C. Lockwood, L. J. Morand, Wm. J. Stapleton, Jr., C. E.

Dutchess, Wm. A. Evans, Wm. S. Reveno, R. Lee Laird, Roger V. Walker, C. E. Lemmon, H. W. Peirce, H. L. Clark, M. H. Hoffmann, J. A. Kasper, A. H. Whittaker, S. P. L'Esperance, R. S. Goux, B. U. Estabrook, C. S. Ratigan, B. L. Connolly, F. B. Burke, J. A. Hookey, J. C. Kenning, C. K. Valade.

### DETROIT COLLEGE OF MEDICINE ALUMNI DAY

Annual Alumni Day of the Detroit College of Medicine and Surgery (now the Wayne University College of Medicine) will be held on Thursday, June 7th. Beginning at 9 A. M. at the Collège Auditorium, diagnostic medical clinics will be held by Dr. Charles Phillips Emerson, Professor of Medicine, Indiana University School of Medicine and William Carpenter MacCarty, director of the Department of Surgical Pathology of the Mayo Clinic. Dr. Emerson was on the Alumni Clinic program in Detroit several years ago and his presentation was so outstandingly brilliant that few who heard him then would willingly miss him this time. Dr. MacCarty's international reputation in general pathology and cancer diagnosis particularly is well known as an added feature. These two men will also conduct a clinico-pathological conference. The Detroit Dermatological Society has arranged a skin clinic which is expected to exceed in interest and teaching value previous clinics for which they are rightfully famous. A noon-day luncheon has been arranged for at the College Auditorium.

The banquet will be held at the Hotel Statler and will be in part a testimonial dinner to Doctors Angus McLean, Don M. Campbell and Andrew Biddle. Doctor James W. Inches will be the principal speaker of the evening. The banquet is the occasion of Class Reunions of the following classes and the chairman of each of these classes has been communicated with and he in turn will contact each member of his class: 1934, 1929, 1924, 1919, 1914, 1909, 1904, 1899, 1894, 1889, etc.

### AMERICAN MEDICAL GOLFERS MEET JUNE 11, CLEVELAND

The twentieth annual tournament of the American Medical Golfing Association will be held at the Mayfield Country Club, Cleveland, Monday, June 11. Thirty-six holes and eighteen hole matches will be played for the fifty prizes offered in eight events. This includes the championship event, which has as its major prize the famous Will Walter Trophy, awarded since 1923 for low gross thirty-six holes. This trophy, designed by Edgar Millar and executed by the Cellini Shop, Evanston, Ill., symbolizes the evolution of medicine.

The first handle depicts the age of primitive ignorance, with shaman witch doctor, spells and the invocation of nature gods to cure ailing mankind, from antiquity to 500 B. C. The second handle shows the age of Greek thinkers, bearing the serpents symbolic of Æsculapius, god of medicine—an age of thought and research, from 500 B. C. to 640 A. D. The third handle represents the age of medieval superstition from 640 A. D. to 1500 A. D., with an astrologer, the physician common to the dark ages. The fire of incantation rises behind the figure as he traces a cabalistic sign in the air. The fourth handle depicts the age of modern medical research, from the Renaissance to modern time, with increasing light spreading from a figure symbolic of an enlarging vision.

Winners since the cup was placed in competition have been Drs. E. A. Seaforth, San Francisco, 1923;

George McKee, Pittsburgh, 1924; Homer Nicoll, Chicago, 1925; S. M. Hill, Dallas, Texas, 1926; George McKee in 1927; Walter Shelden, Rochester, Minn., 1928; John Loudon, Yakima, Wash., 1929 and 1930; George McKee, 1931; S. M. Hill, 1932, and Mark Bach, Milwaukee, 1933.

Other Events and Trophies include the Association Handicap, 36 holes net, with The Detroit Trophy; the Choice Score Championship, 36 holes gross, with the St. Louis Trophy; the 18 Hole Gross Championship, with The Golden State Trophy; the 18 Hole Handicap Championship, with The Ben Thomas Trophy; the Maturity Event, with The Minneapolis Trophy; the "Oldguard" Championship, with The Wendell Phillips Trophy; the Kickers Handicap, with The Wisconsin Trophy.

Dr. Homer Nicoll is president; Drs. Charles Lukens, Toledo, and John W. Powers, Milwaukee, are vice presidents of the American Medical Golfing Association, which has a total membership of approximately 1,100, representing every state in the Union. All male Fellows of the American Medical Association are eligible to membership. A cordial invitation is extended to every medical golfer to write the executive secretary, Bill Burns, 4421 Woodward Avenue, Detroit, for an application blank. An enjoyable day on June 11 will be the result.

## OF GENERAL MEDICAL AND SURGICAL INTEREST

### URETHROCYSTOGRAPHY IN THE MALE

Previous experience with urethrography or cystography enabled Joseph A. Hyames, Herbert R. Kenyon and Samuel E. Kramer, New York, to develop a technic for the performance of urethrocystography by combining several procedures previously advocated by other workers with a simplified manometrically controlled syringe devised by them. The patient is placed on an x-ray table equipped with a Bucky diaphragm. A small catheter is introduced under asepsis, the bladder capacity estimated with sterile water and a quantity of the 3 per cent solution of sodium iodide slightly less than the estimated capacity is introduced through the catheter, which is then withdrawn. The oblique and antero-posterior positions are most satisfactory. During the first exposure the patient is placed obliquely on the table, with the under thigh flexed and the upper thigh extended. The penis is extended, below and parallel to the flexed thigh, and the urethral contrast solution injected through the meatus; the manometrically controlled syringe provides a safeguard against the use of excessive force. The total quantity of fluid used for urethral distention is approximately from 50 to 70 c.c. The use of oily solutions increases the possibility of leakage. The tube is focused on the lower portion of the symphysis pubis and inclined toward the head at an angle of 5 degrees. The roentgen exposure is made as the fluid is flowing freely into the bladder. Should the flow be impeded, the patient is instructed to void as the exposure is made. If the bladder cannot be entered because of impassable obstruction, the bladder contents may be rendered opaque by the intravenous use of a contrast substance, after which the urethra can be filled in the ordinary manner. A second exposure is made with the patient in the dorsal position, the legs extended and the penis drawn down between the thighs. The best roentgenograms are obtained

by using an x-ray apparatus of the greatest penetration, thus diminishing the time of exposure. The authors have found it unnecessary to go above a pressure of 220 mm. of mercury. A drop in pressure of from 10 to 20 mm. is usually noted as the external sphincter relaxes. Pressures exceeding 200 mm. of mercury suggest the possibility of trauma, spasm, or lack of coöperation on the part of the patient, which may prevent satisfactory filling of the posterior urethra. Excessive pressures may result in mucosal injury and, when this occurs in the bulb, the contrast material may enter directly into the vascular system, owing to the intimate relationship of the vessels to the mucosa in this region. In the authors' experience this has occurred only in cases of urethral stricture involving the bulbomembranous junction in which recent instrumentation had been attempted and manometric control was not employed. Although they have not observed any constitutional reaction or permanent ill effects following urethro-venous injection, its occurrence emphasizes the necessity of employing innocuous solutions. Following instrumental exploration of the canal, an opportunity should be afforded for the traumatized urethral areas to heal before urethrocystography is performed. Should both roentgenographic and instrumental investigation be contemplated at one sitting, the former should precede other intra-urethral manipulations. Injections of contrast mediums are contraindicated in the presence of acute infections, active inflammations and recent extensive injuries. The authors discuss the interpretation of urethrocystograms, stricture of the urethra, enlargement of the prostate and observations following operations for vesical neck obstructions and state that the combined method has adequately demonstrated bladder, urethral and adnexal changes and has proved less expensive, less time consuming and more satisfactory as a routine diagnostic method than urethrography or cystography as individual procedures.—*Journal A. M. A.*

#### INSULIN IN TREATMENT OF TUBERCULOSIS

Frederick M. Allen, New York, presents a study of more than eighty nondiabetic tuberculosis patients treated with insulin. In general, he has administered more insulin than has heretofore been given to nondiabetic persons. One man received 320 units a day with rapid gain in weight, but this was an exception. Treatment was usually begun with 5 units before each meal and increased to about 40 units three times a day, but individualization should be emphasized as the chief principle. There are individual peculiarities of insulin tolerance. Women are apt to take less than men. Toxic patients usually do not stand as large doses as the nontoxic, contrary to the rule in diabetes. The same individual may differ in his insulin requirement at different times. When small doses are unsuccessful, large doses will sometimes give results and vice versa. When a patient has flourished for several weeks or months on a certain dosage and has perhaps reached normal or slightly more than normal weight, he may begin to show sensitiveness in the form of insulin reactions or nausea and may continue to thrive only after the dose has been reduced. The author has continued the administration of insulin over a period of eight months. The kind and quantity of the diet is also planned to suit the patient, but commonly a mixed diet containing liberal carbohydrate may be given, consisting of not only the usual three meals but also lunches between meals and at bedtime. In

character, the author's cases ranged from mild to moribund. The majority were severe, active and febrile. Reactions are usually easy to prevent and harmless if they do occur. Fever is by no means a contraindication. Hemorrhage also need not be a contraindication, except in a minority of sensitive cases. Rarely, urticaria or other symptoms may prove troublesome, even to the extent of stopping the treatment. Intestinal lesions are more often an indication than a contraindication for insulin. The author's general conclusion from a study of his cases is that in a large proportion of tuberculosis cases ranging from quiescent to severe, the proper use of insulin can produce marked gains in weight, strength and spirits.—*Journal A. M. A.*

#### THE DOCTOR'S LIBRARY

*Acknowledgment of all books received will be made in this column and this will be deemed by us a full acknowledgment to those sending them. A selection will be made for review, as expedient.*

NEW AND NON-OFFICIAL REMEDIES, 1934, containing descriptions of the articles which stood accepted by the Council on Pharmacy and Chemistry of the American Medical Association on Jan. 1, 1934. Cloth. Price, Postpaid, \$1.50. Pp. 510; lx. Chicago: American Medical Association.

New and Non-official Remedies, 1934, has the same pleasing format and helpful mechanism that has characterized it in past years. The enrichment of the indexing started a few years ago is continued and its value even increased by some desirable simplification of cross references.

The Council has made the usual careful revision of the book. The general article Lactic Acid-Producing Organisms and Preparations has been practically rewritten. The chapter on Arsenic preparations has undergone some revision, especially in the statement concerning Neoarsphenamine. The descriptions of Chiniofon and Vioform have been revised in the light of recent developments in the treatment of amebiasis. The article on Ethylhydrocupreine has been revised to delete references to Optochin Base, which has been omitted; Optochin Hydrochloride has been retained, being recommended only for external use. The description of Typhoid Vaccine has been revised to give the dosage of the combination of typhoid and paratyphoid organisms and to mention the use of typhoid vaccine in nonspecific protein therapy. A number of revisions of the Council's Rules have been made, particularly with reference to the names of products, which is one of the most frequent and troublesome of the problems with which the Council has to deal. Comparison with last year's volume will show that revisions of more or less importance occur in many other chapters.

Among the preparations newly included in this volume are: Aminophylline, a double salt or mixture of theophylline and ethylenediamine, with the advantage of greater solubility over other theophylline preparations; the new alum precipitated diphtheria toxoid; Neo-Iopax, a new medium for intravenous urography; Benzedrine, an ephedrine substitute; serums containing Type II pneumococcus antibodies, which the Council has recently recognized as worthy of clinical trial in view of improved preparations and technic; Autolyzed Liver Concentrate and Extralin, two new liver preparations for use in the treatment of pernicious anemia; Metycaine, a new local anesthetic; and Sodium Morrhuate, a salt of the fatty acids of cod liver oil, proposed for use as a sclerosing agent.

The Secretary of the Society will please notify the State Secretary immediately of any errors or change in these offices.

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